Croonian Lectures
ON
POINTS CONNECTED WITH DIABETES.

Delivered at the Royal College of Physicians,

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LECTURE III.—PART V.

IT appears to me that what we learn from the action of carbonic oxide affords assistance towards the comprehension of the subject before us, through the medium of analogy. Oxygen and carbonic oxide form allied compounds with hæmoglobin. The presence of oxygenated blood in the portal system, and blood impregnated with carbonic oxide, both occasion glycosuria. The great difference noticeable in the relation of the two gases to the blood is that the one is readily parted with, whilst the other is strongly held, and it is just this difference which accounts for ordinary respiration being unattended with the effect which follows the inhalation of even a small quantity of carbonic oxide. It can be readily shown in the case of carbonic oxide that the production of glycosuria is not due to an increased afflux of blood to the liver through an influence upon the blood-vessels, and if such be true for carbonic oxide, there are grounds for believing it to be equally true for oxygen. I have found, for instance, after ligature of the hepatic artery, ligature of the superior mesenteric artery, and even ligature of the cœliac axis, that the inhalation of carbonic oxide has been followed by the usual strongly-marked glycosuria. It may be assumed that it is to the effect of the blood that the result is attributable, and that blood either unnaturally charged with oxygen or impregnated with carbonic oxide acts upon the amyloid substance in such a manner as to lead to its abnormal transformation into sugar.

If we give attention to the position in which amyloid substance is found in the system, it will be perceived that venous blood is favourable, and oxygenated blood unfavourable, to its accumulation. Let us see to what extent this can be shown to be the case. The circumstance is one which harmonises with the considerations I have just disposed of.

There is no organ in the body supplied with venous blood in like manner to the liver, and, in correspondence, nowhere does amyloid substance exist to a like extent.

In contrast to the condition of the adult liver, the organ during the first portion of intra-uterine life is free from amyloid substance. It is a curious fact, which was many years ago pointed out by Bernard, that during the first portion of fœtal life the liver is free from amyloid substance, and sugar is found in the liquor amnii and the fluid of the allantois; whilst, during the latter portion, the liver contains amyloid substance, and no sugar is met with in the fluids that have been mentioned. This has always stood as a surprising and inexplicable phenomenon, but with the knowledge now possessed regarding the effect of oxygenated blood it admits of rational explanation. The umbilical vein, which contains arterial blood, is connected with the liver in its passage to the inferior cava, and must mainly supply the organ at an early period of fœtal life. It happens at this period that the liver presents a state of development greatly out of proportion even to every other part of the organism. Text-books in anatomy tell us that in the human fœtus the organ at the third and fourth week of embryonic life constitutes one-half of the weight of the whole body. Under such circumstances the supply of venous blood to the liver from the chylo-poietic viscera must therefore be quite insignificant, and with the oxygenated blood from the umbilical vein the conditions will be such as to promote the transformation of amyloid substance into sugar, thereby leading to the absence of the former principle in the organ, and the presence of the latter in the liquor amnii and the fluid of the allantois. As fœtal life advances, the relation between the liver and the chylo-poietic viscera, as regards development, becomes altered. The former no longer continues to hold the same prominence over the latter, and with the increasing growth of these latter it follows that the amount of portal blood acquires more and more significance. Without appealing to any consideration regarding the precise anatomical disposition of the umbilical vein, in relation to distribution to the liver, it may be said to constitute a necessary consequence of the development of the chylo-poietic viscera that the liver must receive a relatively larger supply of portal blood, and in proportion as this advance occurs, and a preponderance of portal blood reaches the liver, so will the conditions be favourable to the accumulation of amyloid substance, instead of the occurrence of its transformation into sugar. Thus the different states observed stand in harmony with what might be expected under the respective circumstances existing.

Whilst the liver forms the chief seat of amyloid substance in the body of the adult, it is not absolutely restricted to this organ. It has been recognised also in the pulmonary and muscular tissues; but observation shows that when present under physiological circumstances in these structures it is only so to a comparatively insignificant extent, and this at a time when a reduced supply of arterial blood prevails. For instance, it is especially in muscles that have existed in a state of rest, and in those of the hibernating animal during the period of hibernation that it is to be discovered, and it has been observed to disappear under the resumption of activity. The tissue of the lungs has been found to yield it during hibernation, but under other natural states it is absent.

In the case of the solidified lung of pneumonia, however, amyloid substance is to be met with to a notable extent. This I look upon as an exceedingly interesting fact; for it happens that under the circumstances existing we have a condition, as regards blood-supply, identical, it may be said, with that of the liver. The lungs, like the liver, receive arterial blood through the bronchial arteries, which may be compared to the hepatic artery, and venous blood through the pulmonary artery, which for our illustration may be looked upon as holding the same position as the portal vein. In a natural state the venous blood loses its character, and becomes oxygenated within the organs, thus furnishing a condition which is antagonistic to the accumulation of amyloid substance. In the solidified lung-tissue of pneumonia, however, on account of its imperviousness to air, the venous blood of the pulmonary artery will retain its venous character, and stand in the same position as the portal blood does to the liver. With blood supplied through the bronchial arteries and the pulmonary artery, and the lung-tissue in a state of solidification, a disposition exists which is identical with that belonging to the liver, and under these circumstances it is noticed that amyloid substance accumulates, whilst under a natural state of functional activity it does not. Evidence such as is here presented strongly points to its being through its exceptional supply of venous blood that the liver is placed in a position for performing what it does in relation to amyloid substance.

I may refer to one more circumstance bearing on the condition of the blood in relation to the accumulation of amyloid substance. In the fœtus this substance is found in a number of structures from which it is absent in the adult. I would suggest that it is to a partially venous state of the blood distributed to the tissues of the fœtus, in contradistinction to the state existing in the adult, that the difference noticeable is due.

From all these considerations, which tally with and strengthen each other, we may generalise, and say that amyloid substance is a body which tends to accumulate in certain animal structures under the influence of a limited supply of oxygen, and that it is owing to the liver occupying the exceptional position it does in relation to venous blood that its special condition is attributable. What essentially concerns us with reference to diabetes is, that if oxygenated or imperfectly de-arterialised blood pass to the liver through the portal vein, the transformation of its amyloid substance into sugar is occasioned, and glycosuria produced. Naturally the liver receives thoroughly-formed venous blood through the portal vein. This is what is needed for the proper exercise of its functional capacity, and under this condition the formation of sugar is not promoted.

We shall see later on how an imperfectly de-arterialised state of the blood contained in the portal vein may be brought about to account for diabetes. At present I am only

dealing with the fact that blood in such a condition suffices to give rise to glycosuria. I do not commit myself to any explanation of the precise *modus operandi*. The fact itself is all that is actually wanted. That oxygenated blood promotes the transformation of amyloid substance into sugar may be taken as established, but whether, as regards the sugar absorbed from the alimentary canal, it interferes with the formation of the substance from it, or whether the formation takes place, and then the transformation back again into sugar, cannot be stated. To explain more fully what I mean, let me represent the point as follows. We know that, under natural circumstances, the sugar derived from ingestion, and absorbed from the alimentary canal, becomes converted into amyloid substance. This I have previously spoken of as the first step of an assimilative action which is carried out by the liver. At present our knowledge does not enable us to follow the assimilative action and state what next occurs; but this, to my mind, has been sufficiently established, that sugar gives origin to fat. In diabetes, the assimilation of sugar fails to be carried out. It may be that the condition of the blood interferes with the accomplishment of the first step, or the formation of amyloid substance, and thus leads simply to the passage of the principle uninfluenced through the liver; or, it may be that conversion into amyloid substance occurs, and that this, through the condition of the blood, is brought back again into sugar. The fact stands that the sugar from ingestion is not stopped from reaching the general circulation as it ought to be, and I incline to the opinion that a simple passage through the liver is what occurs.

I may refer here to the production of glycosuria by an opposite condition to that which I have been commenting upon. In my former writings I have stated that glycosuria can be produced by obstructing the respiration to the extent of occasioning partial asphyxia. This may seem inconsistent with what I have been saying about oxygenated blood. No inconsistency, however, in reality exists; but, apart from this, the statements are statements of fact, and if they appear irreconcilable, the fault must lie with the power of explanation. Because the flow of oxygenated blood through the liver leads to the metamorphosis of the amyloid substance contained in the hepatic cells into sugar, and that of venous blood under natural conditions does not, it does not follow that amyloid substance is not convertible into sugar by the influence of direct contact with venous blood. Indeed, when amyloid substance is mixed with blood, no matter whether it be arterial or venous, its transformation into sugar is very speedily excited. Now, the effect of obstruction of the breathing is to produce impeded flow of blood through the lungs and a corresponding general venous congestion, and under this state the hepatic cells will be subjected to undue pressure, which may lead to more or less transudation and direct admixture of their contents with the blood. Thus the same effect may be induced as by the experimental injection of amyloid substance into the jugular vein, and this is known to be attended with the production of glycosuria.

We now come to the question of what bearing the fact relating to the production of glycosuria by the presence of oxygenated blood in the portal vein, which I have been laying so much stress upon, has in connexion with human diabetes. Having reached this point, we are brought into contact with the nervous system.

It has long been known that diabetes may be experimentally induced by puncturing a certain part of the floor of the fourth ventricle. The discovery of this fact by Bernard added greatly to his early renown, and, strangely enough, he was led up to it by a train of reasoning which afterwards proved to be groundless. For a time Bernard's experiment simply supplied an isolated piece of information, but later on, in endeavouring to find out the manner in which the puncture of the medulla oblongata acted, I discovered that injury of certain parts of the sympathetic system also produced glycosuria. I looked upon the medulla oblongata as a centre which must exercise an influence upon the liver, and directed my experiments to ascertain the channel through which this influence was exerted. In the course of my experiments I was led, from negative results obtained in other ways, to try the effect of dividing the sympathetic filament ascending from the superior thoracic ganglion to accompany the vertebral artery in its canal formed by the foramina in the transverse processes of the cervical vertebræ. This I found produced strongly marked glycosuria. I also, in the same course of experiments, noticed that glycosuria followed removal of the superior cervical ganglion. From division of the gangliated cord in the chest I likewise upon some occasions obtained a similar result, but in this group of experiments there was a want of the accord noticeable in the others. Division of all the nerves immediately belonging to the liver, as they passed to the organ in company with the hepatic artery and duct and the portal vein, in every instance failed to occasion glycosuria. My results were communicated to the Royal Society in 1859, and also published in the volume of the "Guy's Hospital Reports" for that year. They have been confirmed by the subsequent experiments of Cyon and Aladoff, Schiff and Eckhard, and I sometimes notice the experiments of these authorities referred to as though they furnished original knowledge upon the subject.

I have said that glycosuria followed division of the nerves passing from the superior thoracic ganglion to the vertebral artery. On dividing the nerves higher up in the neck—viz., within the vertebral canals,—which was effected by first carefully ligaturing the vertebral arteries below and then with a blunt hook tearing through all the structures passing through a vertebral foramen, I did not observe the production of saccharine urine unless the carotid arteries were also ligatured. This was the issue of what was noticed in several experiments, and I was obliged simply to record it without being able satisfactorily to account for it. I may further mention that I was struck with the fact that in no instance did I notice glycosuria when the operation was performed above the foramen in the transverse process of the atlas.

Now, it has long been known that Bernard's puncture induces a hyperæmic state of the chylo-poietic viscera. Schiff asserted many years ago that lesion of the nervous centre in the region of Bernard's puncture was accompanied with a dilatation of the small vessels of the intestine and liver, producing a kind of paralytic hyperæmia of these organs. The same condition has been noticed to have been produced through the medium of injury to the sympathetic. Schiff believed that from the hyperæmic state he had noticed to exist a ferment was developed which acted upon the amyloid substance of the liver, exciting its transformation into sugar, and so accounting for the production of glycosuria. This view, which brings in the development of a ferment, stands without support, and I will proceed to show how the production of glycosuria is to be otherwise explained.

One of the main points I have brought forward in these lectures is that the effect of blood unduly charged with oxygen reaching the liver by the portal vein is to occasion glycosuria. It happens that this is just the state into which the portal blood is thrown by vaso-motor paralysis affecting the vessels of the chylo-poietic viscera, and such, I consider, constitutes the key to the explanation of the saccharine condition of the urine in diabetes. It may be observed by superficial examination in the case of division of the sympathetic in the neck, that not only is there a hyperæmic condition of the ear, but that the veins contain much redder blood than natural. In fact, the blood passes with such velocity and in such volume through the affected part that it does not become properly de-arterialised. A similar state existing in connexion with the vessels of the chylo-poietic viscera will give what is sufficient to produce glycosuria. Without any new agent being brought into the question, the simple passage of blood through the vessels in such a manner as to cause it to arrive in the portal vein in an imperfectly de-arterialised condition will supply all that is wanted to account for the unnatural passage of sugar. In the vaso-motor paralysis, which observation shows is produced by lesions of the nervous system that give rise to glycosuria, we have a condition that leads to the presence of imperfectly de-arterialised blood in the portal vein, and in this presence of imperfectly de-arterialised blood in the portal vein we have a condition that suffices to determine the escape of sugar from the liver in a manner to produce a diabetic state of the urine.

Physiologists have referred the production of glycosuria under the circumstances alluded to to hyperæmia of the liver. Doubtless hyperæmia of the liver accompanies the exalted flow of blood noticed through the other viscera of the abdomen, but it is not specially this which is required to account for the phenomenon. I have already stated that I have not found glycosuria follow division of all the nerves passing in the lesser omentum to the liver, an operation which might be rather expected to cause hyperæmia of the organ by paralysis of the coats of its artery.

SOME CASES OF DISLOCATION OF THE HIP AND SHOULDER JOINTS;

WITH OBSERVATIONS THEREON.

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DISPLACEMENTS of the femur at the hip-joint are so few and far between in the practice of any individual surgeon that he cannot test fairly the comparative merits of rival theories and methods of reduction. It is only from the accumulated experience of different surgeons that general conclusions can be drawn. Hence it is of importance to record cases of the kind as they occur, in order that material may be accumulated from which safe deductions can be obtained. The able paper by Mr. Morris read at the Medical and Chirurgical Society, which I am sorry I did not hear, has imparted a fresh interest to hip-joint dislocations, and will no doubt stimulate observers to record very carefully the history of their cases, the exact manipulations employed for their reduction, and, in cases fatal from other causes, the post-mortem appearances. In regard to the last-mentioned particular, it is important to note the precise parts of the capsule which have suffered injury, as well as the state of the surrounding muscles, and especially the obturator externus and obturator internus and its satellites, the gemelli. The true history of dislocations of the hip-joint can scarcely be written only from anatomy and experiments on the dead subject, but from these in combination with faithful records of a large number of cases. Anatomy undoubtedly informs us that the capsule of the hip-joint is strong behind and above and strongest in front, and that it is comparatively weak internally and below. Experiment shows that in abduction of the limb a larger portion of the cartilaginous head of the femur projects from the acetabulum than in any other position, and rests upon a weak part of the capsule; whilst in adduction the head is lodged at the outset securely in its socket, and subsequently pressed against a strong segment of the capsule. It also becomes clear that dislocations of the femur can be produced on the cadaver with much less difficulty during abduction than during adduction of the limb. Moreover, from the experiments of Professor Fabbri and Mr. Morris, it would appear that by abduction of the limb the head of the femur may be driven through the lower part of the capsule of the hip-joint, and that any variety of dislocation may be produced secondarily by modifying the subsequent manipulations. Are we, then, to conclude that in the *living* subject *all* dislocations of the hip-joint unaccompanied by fracture take place during abduction of the limb, and are primarily downwards; the aperture in the capsule through which the head escapes being always situated at one spot—namely, the inferior segment? Should we not be guilty of the fallacy of inferring a universal from a particular by drawing this wide conclusion from our necessarily limited observations and experiments? I think we should. In the first place, we must bear in mind that the conditions under which displacements are suffered by living patients differ considerably, in regard to the position of the body, the condition of the muscles, and the kind and degree of force exerted, from those to which the dead body is submitted. Secondly, we must admit that the observations of men like Sir Astley Cooper, Malgaigne, Dupuytren, Syme, Hamilton, &c., ought to be sufficient to show that the capsule is often torn from the acetabulum for a considerable and perhaps the greater part of the extent of its attachment, and that the muscles, including the obturator internus, are extensively ruptured. These results entirely agree with those obtained on the dead subject by competent observers. Experiment shows that the head of the femur escapes, not through a hole in the capsule of limited extent, but through the interval left by the separation of the capsule from the bone. The fibres of the ligament are not torn across in their continuity, and they are not merely separated from each other so as to admit the passage of the head of the bone, but are stripped from their osseous attachment—just as tendons are sometimes divorced from the muscles to which they belong. Thirdly, cases are on record in which the limb of the sufferer was adducted at the time of the accident. A very good illustration may be found in Dupuytren's work on "Diseases and Injuries of the Bones," p. 369:—"Pierre Guilleminot, aged twenty-one, a labourer, of spare habit, whilst wrestling with a companion, was thrown on his left side, the corresponding leg and thigh being carried forwards and *strongly adducted so as to cross the leg and thigh of the opposite side*. The left femur was thus placed obliquely between the body and the ground, the outer side of the lower part resting on the ground, and the upper part supporting the weight of the body, and by the leverage thus obtained the head of the bone was dislocated upwards and backwards. The patient was unable to rise or move the limb, and it was soon perceived that it was shorter than the other." A striking case was reported by Surgeon-Major Moffat in THE LANCET for Aug. 24th. Are we to ignore circumstantial reports like this, or to set them aside as fallacious because they do not agree with our own limited inquiries? My impression is that it would be very unwise to deny the occurrence of any form of injury which it is possible to produce.

When a particular injury is capable of being produced in more than one way, we may reasonably expect to be able to establish with more or less certainty which is the most common and easiest way of production, but we can scarcely assert without temerity that it never occurs in any of the other possible ways. This, speaking under correction, I regard as the present position of the question of the mode of production of hip dislocations, so far at least as concerns displacements on to the dorsum ilii and into the sciatic notch or its vicinity. With regard to the obturator displacement, there is very little room for controversy. To produce this dislocation the limb must almost of necessity be in a position of abduction, and whether the capsule be torn more or less freely from the acetabulum or the femur is not worth discussing. I believe that when reduction is very easy the hole at the insertion of the capsule is larger than when reduction is difficult. On the dead subject, when the capsule has been freely torn from the inner half of the margin of the acetabulum the least disturbance causes the head of the bone to return into its socket, and I fancy this would not occur if the capsule were less freely torn, or torn only at the lowest part.

Probably there was a free laceration in the case of Sarah P——, fourteen years of age, admitted into the London Hospital under my care in 1875, with a dislocation into the obturator foramen. Ether was given, and during its administration (to use the words of the notes) "the dislocation reduced itself." Not quite so free probably, but sufficiently free, was the laceration of the capsule in the following instance.

CASE 2. *Dislocation of the head of the femur into the obturator foramen; absence of lengthening; reduction by manipulation two hours after the accident.*—George C——, aged fifty-two, woolsorter, was engaged in his occupation on Sunday, the 11th of March, 1877, owing to pressure of work on account of coming sales. A heavy bale of wool fell off a pile close to where he was standing, and hit him in an oblique direction upon the upper part of his right thigh, the distance traversed by the bale being about four feet. At the time he was standing with his legs apart and his body bent forwards in the act of picking up some wool. The accident happened about 1 P.M., and he was brought to the hospital and taken in by my house-surgeon, Mr. Needham, who was anticipating my arrival, and thoughtfully abstained from attempting reduction. At 3 P.M., when I saw the patient, the symptoms were well-marked: bent position of trunk; abduction of thigh; slight flexion of the hip- and knee-joints; foot pointing obliquely forwards; great depression over the trochanter major; apparent lengthening, the pelvis being lower on the right side. He was taken to the theatre and placed under chloroform. The head of the bone could not be defined; it appeared to be buried beneath the adductor muscles, which were in a state of tension. The hamstrings were also in a similar condition, and it was not possible to straighten the limb with perfect accuracy, but it was brought very nearly straight. On measuring from the anterior superior spine to the inner malleolus, and comparing this measurement with that of the other limb, I found from half to three-quarters of an inch of shortening, a repetition of the measurement giving the same result. Allowing for the very slight bend in the leg, I may call the condition an absence of the usual lengthening of the limb. I understand from my house-surgeon that he measured the limb on admission, and found it longer, and that my colleague, Mr. Maunder, who was at the hospital and in the theatre with me at the reduction, had done the

same. I did not measure either the femur only or the limb from the symphysis pubis. Reduction was effected readily enough by manipulation. Requesting the dresser to grasp the upper part of the thigh and make slight traction outwards, I flexed the thigh towards the abdomen, bringing the limb into a line with the trunk (adduction), and making traction of the limb forwards, with my arm under the patient's knee, for the purpose of preventing the head of the bone from rolling in the groove for the obturator externus below the acetabulum. Circumduction and extension were then practised, but when the limb was brought down, it was found that after all the "sciatic" displacement had been produced. Flexion, circumduction outwards, or rotation outwards (it is extremely difficult in practice to separate these two movements accurately when the head of the bone is displaced), and extension at once placed the head of the femur in the acetabulum.

Remarks.—I have not by me any surgical work which mentions the possibility of shortening of the limb in obturator dislocation. All the authorities speak absolutely of about two inches lengthening of the limb. Not having met with any mention of this condition, I thought I must have been mistaken in my measurement; but having produced the obturator displacement on two subjects, whose lower limbs were of equal length, I found that in neither was the limb longer when measured from the anterior superior spine to the malleolus. I apprehend, therefore, that at first, in the thyroid displacement, the head of the bone is not in close apposition to the obturator muscle over the thyroid foramen, but lies at a lower level, and that after a time it may either have its position altered by some movement of the body (such as my patient was subjected to in his removal from the ward to the theatre), or by the muscles which draw it well up against the pelvis. In the diagram in Mr. Erichsen's admirable work on "The Science and Art of Surgery," the head of the bone is placed low down on the margin of the obturator foramen near the tuberosity of the ischium, and it is evident at a glance that a higher position would materially shorten the lengthened skeletal limb. Mr. Luke has reported a case of dislocation of the head of the bone below the acetabulum, which is referred to by Mr. Holmes and Mr. Erichsen. I had the opportunity of witnessing it as it occurred—with two other dislocations of the hip, one into the thyroid foramen and the other on to the dorsum ilii—during a week in which I was officiating as dresser under Mr. Luke. The limb was lengthened for one inch only.

I am therefore inclined to believe that the description "dislocation into the thyroid foramen" does not express with accuracy the exact position of the head of the femur in the cases in which there are two inches of lengthening. In reporting cases of the kind it should be stated how the measurement is made, for when the head is in the oval foramen there is a marked difference between the measurement from the symphysis and from the anterior spine, when compared with similar measurements on the opposite side. It is scarcely necessary, perhaps, to add that care should be taken to ascertain whether the lower limbs are naturally of the same length. Since these remarks were written Mr. Holmes has published a clinical lecture in the *Medical Times and Gazette*, in which he doubts the possibility of lengthening in the true thyroid displacement.

In regard to the conversion of the "obturator" displacement into a "sciatic" displacement, that, as well as the reverse conversion of the "sciatic" into the "obturator" during manipulation, has been frequently noticed; and it is curious that reduction in either case may be facilitated by the change. Bigelow, indeed, recommends the conversion of the obturator into the dorsal displacement, which he considers easy of reduction. To what is this conversion to be attributed? Evidently to one of two causes: either to some error in manipulation—the surgeon, as Mr. Callender terms it, overacting his part by too much abduction or adduction, as the case may be,—or to the position of the rent in the capsular ligament. In some cases, no doubt, the capsule may fairly be described, with Mr. Callender, as being torn to pieces; in other cases the rent may be more or less located either to the lower, the inner, or the posterior segment, and unless the head be brought opposite to the rent during the manipulation I can understand that an untorn portion of the capsule might prove an impediment to reduction. I cannot, at present, follow Mr. Morris in his universal limitation of the position of the laceration of the capsule, but my mind is quite open to conviction on this as on any other subject.

(To be concluded.)

ON YELLOW FEVER.

BY ANDREW DUNLOP, M.D.

I HAVE already given some account of my small experience of yellow fever (THE LANCET, Feb. 15th, 1868), but after the recent papers of Mr. Cargill (THE LANCET, Oct. 27th, 1877) and Dr. Domet (THE LANCET, May 11th, 1878) I am tempted to reproduce it in another form, and to add a contribution to the discussion of the still unsettled question of the contagious or non-contagious nature of the disease.

On the 26th of July, 1867, I arrived at Havana in medical charge of the steamer *Narva*, which was to lay a submarine telegraph cable between Cuba and Key West, and between the latter island and the west coast of Florida. Particulars are given in my former paper, and I need only say here that yellow fever broke out on board at the end of August, while the section between Key West and the mainland of Florida was being laid, and continued until we passed out of the Gulf Stream on our way to New York in the following month. The incidence of the disease on the ship's company is shown in the subjoined table:—

	No.	Cases.	Deaths.	Remarks.
Electrical staff ...	5	3	2	1 doubtful.
Ship's officers	4	2	—	1 doubtful.
Doctor	1	—	—	—
Engineers	4	3	1	—
Stewards	3	—	—	—
Cable hands	19	14	10	—
Crew, firemen, cook, carpenter, &c. ...	24	2	1	1 doubtful.
Total ...	60	24[1]	14	

The most striking point here is the morbility and mortality amongst the cable hands, compared with that amongst the crew. The crew slept in the forecastle, the blue-jackets on the port and the firemen on the starboard side; their work was naturally almost entirely confined to the ship, except when they had to furnish boats' crews, &c. The cable hands slept between decks, on a level with, and close to, the openings of the two large tanks in which the cable was stowed. These tanks contained water covering the cable, and, as usual, gave off sulphuretted hydrogen in considerable quantity. These men were better fed than the crew, and their work in connexion with the cable took them a great deal on shore, especially on the beach when the shore ends were being laid.

If yellow fever is infectious in the ordinary sense of the word, it is impossible to imagine how it could have affected so unequally two classes of men living together in the close companionship of a ship of some 850 tons. In no case did I observe the slightest evidence of the disease spreading from the sick to those attending on them. One of the electrical engineers and myself constantly watched in turn another of the electrical staff during his fatal illness. He was in a small cabin, not well ventilated, and we were exposed to the emanations from the patient to such a degree that on my return home, about eight weeks afterwards, I could detect the peculiar odour of the disease in the clothes I had worn at the time; yet neither of us had a day's illness. Eleven of our sick were treated on shore, at the Naval Hospital at Key West, at the Hôtel, and elsewhere, yet in no instance did they communicate the disease to anyone. The clothes of the sick were washed ashore, but I never heard of the disease being spread in that way; in fact, everything tended to show that the disease did not spread from person to person, but arose in each case separately from a common local source.

With regard to the contagiousness or non-contagiousness of yellow fever, we find the most contradictory statements made, and the most directly opposite views strongly—not to say vehemently—insisted on. A commission of the General Board of Health made a careful inquiry into the subject in 1852, and came to the conclusion that the disease was a non-infectious one, and their report[2] contains a mass of

[1] One doubtful case is here included, which was not amongst the number given in my former paper.

[2] Second Report on Quarantine, Yellow Fever, 1852.

strong evidence in support of their conclusions. For example, the committee of physicians who reported on the epidemic at Barcelona in 1821 said: "The danger, so far from being in the direct ratio of exposure, was positively (in many instances) in the reverse ratio. In the marine lazarette, in which, from Aug. 7th to Sept. 13th, there entered seventy-nine sick (of whom fifty-five died), not one out of thirty-two of all classes of officers and attendants contracted the disease. In the lazarette of the Vice-Queen of Peru, which received fifty-six sick (of whom thirty-nine died), out of twenty-three persons of various classes who attended them, four only contracted the disease, and these had come out of Barcelona. In the Hospital of the Seminario, into which 1767 persons were admitted during the epidemic (of whom 1293 died), out of ninety attendants on the sick, three only contracted the disease, which is but at the rate of 1 in 30, *constituting a far greater exemption from sickness than was enjoyed by any other portion of the community.*" "During the late epidemic of British Guinea," says Dr. Blair, "the yellow fever cases in their worst forms were never separated from other patients in our hospital wards. ..... Our hospital nurses were not infected, although in the closest communication with the sick, and often smeared with their ejections, and these nurses were generally German and Portuguese immigrants. ..... In December, 1843, the mate of the *Matilda Luckie* was admitted with the graver form of the disease, and of a low type, of which he died. His bed was in a sheltered corner of Ward 2, and had mosquito netting all round. Into this bed a seaman named Burton, who was admitted for disease other than yellow fever—slight indisposition,—was put for several days without any infection of any kind following. In 1849 yellow fever broke out in two coal ships in the harbour of Kingston, Jamaica. ..... Dr. Milroy reports with regard to them: 'Dr. Musgrave informed me that nearly twenty cases of aggravated yellow fever were received from these two vessels into the hospital. A very large proportion of them proved fatal. None of the other inmates or of the attendants of the hospital were affected.'" An outbreak took place on board H.M.S. *Bedford* at Gibraltar, there being no fever at the time in the garrison, and 130 sick were landed and sent to the hospital, of whom eleven died; others were left dangerously ill on the departure of the ship. The disease did not extend beyond the crew. Mr. Hartle, Deputy Inspector-General of Hospitals, who served in the West Indies during a period of more than thirty consecutive years, states that he has on several occasions witnessed the importation of yellow fever cases of the most malignant character, amounting in all to 107, but he never observed a single instance of the communication of the disease to any individual. Dr. Wood[3] says:—"In the terrific epidemic which prevailed in Norfolk and Portsmouth (U.S.) in 1855, though great numbers of the population who fled from the pestilence were scattered through neighbouring and distant villages and cities, and many of them sickened and died, yet in no instance is the disease known to have been imparted to others. Attempts have been made to propagate the disease by inoculation with the blood and secretions of those affected, but without success, and even the black vomit has been swallowed with impunity."

There can be no doubt, however, that yellow fever has frequently been introduced into places previously free from it, and one of the best known instances will serve to show the usual phenomena of such an introduction, and aid in forming an idea of the nature of the disease.[4] On the 25th of July, 1861, the *Anne Marie* arrived at Saint Nazaire from Havanna, having had nine cases of yellow fever and two deaths during the passage. On her arrival the captain, who was recovering from an attack, and all the crew returned to their homes, leaving the mate to superintend the unloading. This work was commenced on the 27th, seventeen labourers being employed. On the 29th a Government tug, the *Chastang*, which had lain close to the *Anne Marie*, left for Indret, about twenty-nine miles distant, arriving there the same day. Her crew, numbering five, on their return home, had resumed their ordinary work, when, on Aug. 1st, one of them was attacked with yellow fever, and between that date and the 5th the remaining four were also attacked. They were treated at their own homes at Indret. On Aug. 2nd the mate of the *Anne Marie* was taken ill, and shortly afterwards ten of the labourers, and thirteen other persons living at Saint Nazaire and its neighbourhood were attacked in quick succession. They were treated at home, and fifteen died. The *Cormoran*, which lay for four days alongside the *Anne Marie*, and for six days more near her, left for Lorient, with a crew of six men, on Aug. 10th, arriving at her destination the same day. On the 14th two cases occurred amongst her crew, which were admitted into hospital, and terminated fatally. The steamboats running between Saint Nazaire and Lorient lay near the *Anne Marie*. One of them (No. 6), which left Saint Nazaire on Aug. 4th, had two of her crew attacked during the passage. One was taken into the hospital, where he died, and the other was treated at home, and recovered. Four persons on board two lighters lying near the *Anne Marie* were indisposed, and it was thought that their malady was a slight form of yellow fever. The *Arequipa* left Saint Nazaire (having also been lying near the *Anne Marie*) for Cayenne on Aug. 1st. On the 5th a case occurred, and from that date until Sept. 23rd seven others were seized, with a total of three deaths.

In considering this outbreak, it is to be observed—(1) That the convalescent captain and the crew returned to their homes, but in no case did they communicate the disease to anyone. (2) That in all the cases (forty-one, and five doubtful) except four, the patients had either been on board or in the immediate neighbourhood of the *Anne Marie*. (3) That of the four exceptions, one was an old-clothes-seller (*revendeuse*), a woman who bought clothing, bedding, old sails, &c., from sailors, and thus may have got into her possession articles from the *Anne Marie*. Another was a woman who consorted chiefly with sailors, and whose house was a place of call for them and men working on board ship. Besides it is quite possible that they also had been in the neighbourhood of the ship. The third exception was in the case of a shoemaker, whose assistant worked as a labourer on board the *Anne Marie*, and returned to his place beside his master, his "*vêtements encore tout mouillés.*" (4) That all the patients were treated at home or in hospital, at Saint Nazaire, Indret, or Lorient (except those on the *Arequipa*), and that there was only one case in which the disease was apparently communicated to anyone attending on them. This was the fourth exceptional case alluded to above. The patient was a medical man living at Montoir, about five miles from Saint Nazaire, and who was attacked on the 13th, after paying a long visit to a yellow fever patient on the 11th, and died on the 17th.

The evidence of the occasional transmission of the disease by persons or things coming from an infected locality (ship or place), somewhat indistinctly shown in the *Anne Marie* case, was more strongly brought out in the epidemic at Lisbon in 1857.[5] There the original focus of the disease was at the Custom-house, and fresh foci were formed by persons coming from the infected spot.

Sir W. Payne, who was one of the most ardent supporters of the doctrine of contagion, has brought forward a great deal of evidence in support of his views in his "Observations on Yellow Fever." He is strongly of opinion that the disease is personally contagious, like small-pox or scarlet fever.

The conclusions to be drawn from a consideration of the history of yellow fever and yellow fever epidemics seem to me to be as follows:—It is an intensely local disease, and local in more ways than one. It is confined chiefly within certain geographical limits, and requires a certain temperature for its existence, and is essentially a maritime disease, being found, with few exceptions, in ships, harbours, and in towns situated on the sea-coast or on the banks of navigable rivers. It is frequently confined to only one quarter of such town, and often to particular houses, or even to particular parts of a ship. Hirsch[6] says that out of 297 epidemics in America, 159 were in coast towns, 133 in towns on navigable rivers, and only 5 in places from nine to twelve miles inland. It may be transported by ships, which, when they have been infected, become moving local centres of disease, and by them implanted in ports where they arrive. When yellow fever spreads it does so by the successive formation of fresh local foci, these being produced by persons (whether in good health or suffering from the disease), or through coming from the original or a previously existing focus. The disease is, in the vast majority of cases, contracted by persons living in or going into a place where it is prevalent, or, in a much smaller number, by those who have been in contact with persons or things coming from such a place.

[3] Practice of Medicine, vol. i., p. 337.
[4] Méller, Relation de la Fièvre jaune survenue à Saint-Nazaire en 1861.
[5] Méller, op. cit.
[6] Ueber die Verbreitungsart von Gelbfieber. Vierteljahr. für öffentl. Gesundheits-pflege. B. iv., Heft 3.

The local character of yellow fever is strongly shown by the numerous instances in which numbers of persons, many of them suffering from the disease, have left an infected locality and settled down at a short distance from it, with the result of very speedily checking the progress of the epidemic amongst them. During the Gibraltar epidemic of 1828 four thousand persons left the town, and were encamped in the neutral ground, taking with them their furniture, &c. The disease was checked at once.[7] At Leghorn, in 1804, six thousand persons left that city for Pisa; at the same time the French army removed to the same place, taking with them 180 men suffering from the disease; yet it was not propagated in Pisa. A good instance of the same kind also occurred at Bermuda in 1864.[8] The 2nd Batt. 2nd Regt. arrived at St. George on July 15th, five days after the occurrence of the first case of yellow fever in the town, and remained there until August 1st. During this time seventeen cases had occurred, with two deaths. The battalion was then sent to the camp at Ferry-point on the same island. Up to September 3rd men were being constantly sent into St. George on duty, and cases occurred amongst them. After this date, however, coloured men were employed in the work, and the disease soon disappeared. At the conclusion of the epidemic the convalescents were paraded and questioned, when it appeared that out of sixty-one cases only seven had, in all probability, originated at Ferry-point. It is interesting to note that at Ferry-point there were thirty-four orderlies attending on the sick, of whom four were attacked; while at the hospital at St. George, out of the thirty-four so employed, thirty were attacked and eighteen died.

It is needless to point out that the characteristics of yellow fever are not those of an ordinary infectious disease. Several theories have been brought forward to account for the contradictory facts observed. I myself am disposed to hold provisionally the view that yellow fever is a miasmatico-contagious disease (to borrow a German expression) analogous to cholera and to enteric fever. It would seem—to speak in terms of the germ theory—that the germs in the blood of a patient cannot reproduce themselves in the blood of another person, but that they require to undergo further development, or to produce a second generation, in a suitable nidus, before they, or the new generation, can multiply in the human body and produce yellow fever. This nidus is chiefly found on board ship, or in seaport towns; and yellow fever may be propagated by its being conveyed, with the disease-germs in it, by ships, persons, or articles. The germs in this nidus at the time of its conveyance may be in an advanced state of development, and ready at once to seize upon the human frame. Under favourable circumstances fresh foci of disease may thus be formed, or persons may be directly infected. The disease seems at times to spread with greater facility than at other times, especially when the temperature is unusually high. This may be due to the rapid development and great activity of the germs.

CASE OF CONSECUTIVE EXCISION OF BOTH KNEE-JOINTS FOR DISEASE,

TERMINATING IN RECOVERY.

BY JAMES BARRON, M.R.C.S. ENG.,
HON. SURGEON TO THE SUNDERLAND INFIRMARY.

STEPHEN H——, aged forty-five years, married, was admitted into the Sunderland Infirmary on May 29th, 1877. Eight years ago, whilst at sea as a ship-carpenter, and sleeping frequently in wet clothes, his knees began to be painful and swollen, with nocturnal exacerbations of pain. Returning from this voyage, he did not feel able again to go to sea, but commenced work as a shipwright on shore, and so continued until the summer of 1875. In this interval he seems to have been regularly at work, but the knees were gradually becoming more swollen and the pain more severe. About this time he was recommended to go to Croft Spa, and was there some weeks taking the sulphur baths; but not experiencing the benefit anticipated, he was removed thence, and admitted into the Durham County Hospital, where he remained seven weeks. He came home, however, unrelieved, and resumed work, though the swelling was still increasing and the knees were now becoming somewhat flexed. On the 12th October, 1876, he was admitted into the Edinburgh Infirmary, where he was first, for three weeks, placed in the surgical wards. After that time he was transferred to the medical wards, and the knees were painted and blistered. After eleven weeks, receiving no benefit, he was discharged, and he returned home in the last week of December, 1876. When he left the Edinburgh Infirmary the contraction of the knees had so much increased that he was unable to walk about.

Five months after leaving Edinburgh he was admitted into the Sunderland Infirmary under my care. On admission he was in a somewhat debilitated condition, but, except in the knees, there were no physical signs of disease. Examining his knees I found them fixed at a right angle, the thighs flexed and abducted, and the feet approximated, so that his position in bed was much like that of a tailor at his board. The right knee-joint was much swollen and hot; surface glossy, pink, and marked with a network of distended veins. The left knee was less swollen; skin nearly natural in appearance and temperature. The muscles of both legs were much wasted. His previous health had always been good; had never had any illness; had been a steady man, but seven years ago had a slight attack of gonorrhœa, which lasted only a few days, and was not succeeded by any secondary symptoms. Married fifteen years; no family living, but his wife had borne him four children, the first of whom died a few hours after birth, and the others at six, eight, and twelve months respectively, as he said, of inflammation of the lungs. His wife had had no miscarriages. His family history was entirely negative: no rheumatism; no joint affection; no chorea; and no consumption.

For about three weeks after admission iodine was painted on both knees, and a blister was applied, but without any apparent advantage. After much consideration, and consultation with my colleagues, I decided to perform excision of the joints, as the most likely means of relieving my patient from his unfortunate position, and procuring for him, as I hoped, good and useful limbs. He and his family were duly informed of all the possible evil consequences that might result from a failure in the operation, but he quickly decided in favour of my recommendation, desiring me, if possible, to save his leg.

First operation.—On June 20th, 1877, with the kind help of my colleagues, the patient being placed under the influence of chloroform, I proceeded to excise the right knee-joint. The operation was performed in the usual way, by a curved incision, and under complete antiseptic precautions. On opening the joint, the synovial membrane was found in an advanced stage of gelatinous degeneration; the cartilage on the inner condyle of the femur was ulcerated, as was that on the corresponding surface of the tibia; and there was partial dislocation of the tibia backwards. Before closing the wound, as much as possible of the diseased synovial membrane was removed. A drainage-tube was inserted along the floor of the wound from side to side, and the limb put up straight on an ordinary Macintyre splint.

There was nothing particular to record in the progress of the case. The drainage-tube was removed on the 29th of August (the 70th day of treatment); and on September 15th (the 87th day) bony union was complete, and the splint was discarded. During this time, the swelling and heat of the left knee had subsided, and there was partial bony anchylosis.

Second operation.—The first operation having been so successful, I was encouraged to proceed with the excision of the left knee, and accordingly on October 10th, I performed the second operation. This was done, as before, under complete antiseptic precautions. On opening the joint, there was found bony anchylosis between the tibia and posterior portion of the articular surface of the femur, the tibia being dislocated backwards. In the first operation, adaptation of the bones was easily accomplished; but in the second perfect adjustment was not effected until a second piece was removed from the tibia, and two or three of the flexor tendons divided. The patella was removed in both operations. The case progressed even more favourably than on the first occasion. The drainage-tube was removed on Dec. 10th (the 61st day of the treatment), and bony union being complete on Jan. 18th, 1878 (the 100th day), he was allowed to be up for the first time, the two operations having been brought to a successful termination within a

[7] Board of Health's Second Report on Quarantine.
[8] Army Medical Report for 1863, p. 307.

period of seven months, or 212 days. The difference in the length of the two legs scarcely amounts to the eighth of an inch.

Remarks.—In concluding the history of this case I would make a few observations on one or two points which appear to me to be of interest.

First, with regard to age:—Stephen H—— was forty-five years old in April, 1877. He had reached the extreme limit beyond which surgeons are agreed that excision should never be undertaken. Mr. Swain, in his work on "Injuries and Diseases of the Knee-joint," at page 151, says: "I would rather excise a knee-joint in a patient before the age of forty than after. The powers of reparation in advanced life are not sufficiently strong to give the patient much chance of a useful limb or to support him through the long after-treatment." In the list of 104 cases given by Mr. Swain, five only are above the age of forty. They are as follows:—Case 27, female, aged forty-three years, after firm osseous union, died from embolism on the 80th day. Case 75, male, aged forty-five, good union, with recovery; no other details are given. Case 77, female, aged forty-six; no union on the 143rd day; died of phthisis. Case 80, female, aged forty-one; no union in 17 weeks, or 119 days; amputation with recovery. Case 92, female, aged forty-two; on the 205th day, there was still slight movement in the antero-posterior direction. Thus, of the five cases said to be over forty years of age, two died; one underwent subsequent amputation with recovery, and two recovered, one with firm union, the other doubtful. That is, only one recovered with good union, and nothing is said as to the nature of the union, whether bony or otherwise, and nothing stated with regard to the duration of the treatment.

In my patient bony union was complete in both legs in a period of seven months, or 212 days. In the first operation bony union was complete on the 87th day, then an interval of 25 days elapsed, after which the second operation took place, and on the 100th day thereafter bony union was complete, and the patient allowed to get up for the first time. If we exclude this period of 25 days intervening between the date of the recovery from the first operation and the date of the second operation, then the duration of the treatment in the two cases extended over a period of only 187 days. Mr. Holmes, in his "Treatise on Surgery," quotes some tables compiled by Dr. Hodge, in which he gives eighty-six cases where the *average* duration of the treatment is stated to have been 240 days, forty-eight cases in which the patella was removed occupying an average period of 225 days, and thirty-eight cases where the patella was believed to have been left occupying an average period of 225 days, or, roughly speaking, about eight months. In examining the cases given in Mr. Swain's list, I have selected twenty-eight cases from it which seem to afford something like precise information with regard to the duration of treatment. Six cases are given at the age of ten years and under, and the average duration was a little more than 81 days; above ten and under twenty, ten cases are given with an average of 101 days; above twenty and under thirty, nine cases are given, averaging rather over 97 days; above thirty, two cases, average 73 days; one aged forty-two, a duration of 205 days. There cannot be a doubt, however, that in the more recent cases of excision of the knee-joint, statistics of a much more favourable character could be given as to the duration of the treatment than in former reports. And this is not more than what might reasonably be expected, owing to the greater skill and experience more lately acquired in the dressing and general treatment of the cases, and especially to the comparatively recent adoption of the antiseptic treatment.

As regards the adoption of amputation or excision in cases of knee-joint disease, Sir Wm. Fergusson has expressed his deliberate opinion "that in eight persons out of ten, under the age of twenty or thirty, in whom disease of the articular surfaces of the bones of the knee-joint seems incurable, the operation of excision should be preferred to that of amputation." And he gives his reasons: "The wound is less, the bleeding less, the loss of substance is less, the shock is consequently less, and the chances of secondary hæmorrhage scarcely worth notice, as the main artery is left untouched, whilst there is the encouraging prospect of retaining a useful and substantial limb." The difference in the duration of the treatment in cases of amputation and excision has been urged against the latter operation; but this, I think, is a matter of little importance in comparison with the object to be attained; and so long as a good and serviceable limb be secured, it is scarcely open to adverse criticism that the patient should be made to lie for a period of six or even more months. But, further, I believe that, as greater experience is gained in matters of detail in the care and management of the cases, this difference will be reduced to a minimum. My own personal experience has been extremely limited, having only performed excision once before, resulting, however, in a rapid recovery, with a good, strong, and useful limb.

The two woodcuts represent, the one a front, and the other a side view of both legs. In the front view the right leg is observed to be somewhat bowed outwards; but this is not dependent upon the operation, as the patient explains that both his legs were bowed before they were operated upon. The cuts are from drawings by Dr. T. W. Barron, taken from photographs.

Then, in the way of warning, I would say that in reading the details of a great many cases I have been particularly struck with the frequent occurrence of deformity after excision recorded in subsequent months or years, and I am

forced to the conclusion that many of the patients who have undergone this operation have been allowed to bear their weight upon the leg much too soon, and at a time when perfect consolidation of the new bone cannot yet have taken place, thus leading to partial dislocation of the tibia in different directions, generally outwards and backwards.

I would add that I am not aware that there is any case on record where excision of both knee-joints has been performed on the same person. I believe this case to be unique in the history of excision of the knee-joint.

In closing my remarks on this case, I would for a moment gratefully take this opportunity of expressing my deep sense of the obligation I feel I am under to my kind and able friend, Dr. Ransom, the senior house-surgeon to the Sunderland Infirmary; for it is to his patient, unwearied, and skilful management of the case that I am chiefly indebted for the happy and fortunate result that has been obtained.

Sunderland.

A CONTRIBUTION TO THE PATHOLOGY OF TETANUS OR LOCKJAW.

BY GEORGE ARTHUR WOODS, M.R.C.S., L.R.C.P.,
HONORARY SURGEON, SOUTHPORT INFIRMARY, ETC.

A FEW months ago a patient, a boy aged fourteen years, was under my care at the infirmary suffering from tetanus, which supervened upon partial amputation of the foot, the result of a railway accident. A week after the operation symptoms of tetanus set in, which, in spite of remedies employed—viz., chloroform, chloral, ice to spine—proved fatal in four days.

The house-surgeon, Dr. Murray, kindly obtained possession for me of the whole length of the spinal cord, medulla, and pons Varolii. Some of the nervous tissue I sectionised whilst in a fresh state, having frozen it in the glaciarium, the other portions of nervous tissue were hardened in one per cent. of chromic acid, care being taken to change the solution every day for the first week, and keep in a cool place. Previous to the cord being placed in the chromic-acid solution, it was cut into pieces about an inch long; the cut did not extend through the entire portion of the cord, so that the relations of the cord were not altered. Sections were made at the end of six weeks. To the naked eye the spinal cord, with the exception of congestion, which was most noticeable in the lumbar region, appeared healthy. The cord, however, when cut into, seemed to "well up," as if it had been constricted at points. The cord seemed heavier than natural; the specific gravity was not taken.

Microscopical examination of the cord.—There was no difference between the freshly frozen and the chemically hardened tissue, so that the changes observed could not have been produced by reagent action. In both series of slides an enormous capillary dilatation is observed, some of the smallest arteries in the neighbourhood of the grey matter (usually about $\frac{1}{1\,3\,0\,0}$ to $\frac{1}{2\,5\,0\,0}$ mm.), being almost as large as those to be described by me near the central canal (about $\frac{1}{1\,1\,0}$ mm.) Numerous round and oval-shaped bodies can be seen, the round being by far the most numerous. These occupy the central grey matter, especially round and about the central canal. On either side of the central canal the vascular spaces are greatly distended, and in the transverse sections no trace of arterial coat can be discovered, but in many instances these enormously distended vascular spaces contain round bodies (? leucocytes). This vascular distension causes gaps and canals, as if the nerve-structure had become to a certain extent displaced by the blood-pressure and dilatation. The posterior cornua exhibit traces of granular disintegration. I did not notice any swelling in the cervical region or in the neighbourhood of the first lumbar vertebra, which was noticed by Dickinson,[1] and which has been thought by Schultze to be artificially produced by removal of the cord.[2] In the posterior columns gaps can be seen showing where dilated vessels have coursed. In the cervical portion, owing to the blood-pressure, the posterior fissure is greatly displaced, thrust on one side instead of occupying the median line; it is also greatly distended. The ganglionic cells in the anterior cornua did not present any structural or other change. In some tetanic cords I have noticed a very limited portion in which colloid bodies were numerous, and made especially noticeable by staining in logwood. I should advise, in the preparation of staining sections of spinal cords, that more than one medium be used, as I feel certain otherwise many structural changes may pass unobserved. The portion of cord in which I have noticed these colloid bodies is usually that portion nearest the seat of injury. Blood-supply in spinal cord of rabbit injected × 60 (normal). The blood-vessels in the cervical are much more numerous than in the dorsal region; usually several vessels of large size can be observed in the neighbourhood (mostly on either side) of the central canal; one vessel larger than the rest is seen at the side of the central canal to pass along the anterior longitudinal fissure, and anastomose with a vessel at the most anterior portion of the fissure. Near the central canal this vessel gives off several branches, which, meeting with other branches, form a dense capillary network in the neighbourhood of the grey matter. Several vessels anastomose in the medullary portion, but the great anastomosis takes place around the grey matter and between the minute ganglionic cells. The vessels seem to be derived from the same source as those supplying the membranes; they enter the medullary substance by minute fissures; some pass in a straight, others in a wavy direction, and at the junction of the grey matter with the medullary substance unite and form a dense capillary network. So minute are the arterial branches of this anastomosis that in many instances the smallest ganglionic nerve-cells can be seen to be almost surrounded by them. The arterial supply is greater in the cervical than in the dorsal region; in the lumbar enlargement the blood supply is again increased, and the anastomosis as fine as in the cervical region. It seems to be the rule, after examining many hundreds of slides, that where the grey matter is more abundant there is the anastomotic network more dense. The veins form a plexus in the posterior columns. The largest bloodvessels are, as before stated, in the neighbourhood of the central canal, and are about $\frac{1}{1\,1\,0}$ mm., the smallest are about the centre of the grey matter in the posterior columns, and about $\frac{1}{1\,3\,0\,0}$ to $\frac{1}{2\,5\,0\,0}$ mm. In man they are considerably larger.

Various pathological changes observed.

In the *brain*, the following changes have been met with in a selection of eighty-one cases from Reeves[3] and other sources. Brain injected in fifteen cases. In one case pus existed on the cerebral dura mater (the patient had had his skull fractured); in two other cases blood was observed external to the dura mater; in another the medulla was softened; arachnoid in three cases opaque; lateral ventricles in three cases contained a large amount of serum.

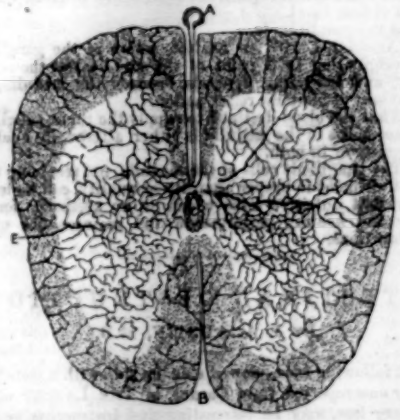
In the *spinal cord* the various changes have been met with and described.

1. Proliferation of connective tissue in chronic cases (Rokitansky).
2. Proliferation of the neuroglia, amounting to sclerosis; granular disintegration of the cells (Lockhart Clarke).
3. Inflammation of the neurilemma (Lepelletier and Froriep).
4. Collection of fat between the membranes and cord; softened patch in the cord just above the cauda equina.
5. Effusion of blood outside the dura mater, about the seventh or eighth dorsal vertebra.
6. Effusion of serum into the spinal membrane.
7. Hæmorrhage into the spinal membrane; proliferation of connective tissue of cord, medulla, cornua cerebri et cerebelli (Wunderlich).
8. Nerve-twig in the wound diseased (Erichsen, Poland, Trousseau).
9. Congestion, inflammation, exudation, softening, induration (Romberg).
10. In many cases no lesion whatever (Wilks).
11. Some lesions of the spinal membrane, or a little more liquid than usual in the membranes, and softening of the anterior columns of the cord (Sandras and Bourguignon).
12. Areas of disintegration and extravasations of blood in different parts of the cord (Clarke, Dickinson, Allbutt, E. L. Fox).

[1] Med.-Chir. Trans., vol. li., p. 265.
[2] Deutsches Archiv, Band xx., p. 399.
[3] Reeves' Diseases of Spinal Cord and Membranes, p. 363.

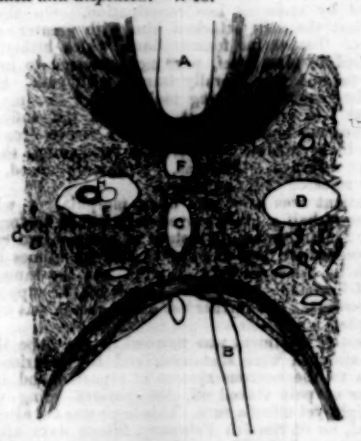
13. Thorough disintegration of posterior columns (Tyson).
14. Parenchymatous inflammation of the ganglion cells, resulting in their ultimate disintegration (Dr. Aufrecht, of Magdeburg).
15. Hyperæmia and granular material surrounding vessels (Coates and Benedict).
16. Enormous dilatation of vessels around central canal, dilatation of anterior fissure, posterior fissure greatly widened and displaced, granular-looking material surrounding many vessels, degeneration at points of nerve-tissue in the neighbourhood of vessels choked with blood-corpuscles (Woods).

FIG. 1. *Transverse section of Spinal Cord of Cat. Cervical region. Injected with carmine.* × 15.



A, Anterior fissure, with bloodvessel traversing and, near central canal, giving off numerous vessels. B, Posterior fissure. C, Central canal. D, Section through vessel near central canal, forming a dense capillary network in neighbourhood of grey matter. E, Wavy course of vessel in white matter.

FIG. 2. *Neighbourhood of Central Canal. Transverse section of Spinal Cord in cervical region. Traumatic tetanus. Showing anterior fissure much distended. Posterior fissure distended and displaced.* × 15.



A, Anterior commissure. B, Posterior commissure. C, Central canal. D, Greatly distended vascular space. E, Ditto. F, Distended artery. G, Columns of Clarke. H, Vessel showing greatly thickened walls.

In the *sympathetic* the following changes have been observed:—

1. Semilunar ganglia injected (Lobstein: de Nerv. Syst. Humani).
2. All the ganglia firmer than usual in one case; in another, enlargement and increased vascularity of the semilunar ganglion, of all the thoracic ganglia, and of several of those in the abdomen (Swan).
3. Semilunar ganglion inflamed (Arousshon).
4. No change whatever observed (Reeves and the author).

Spinal nerves.—From a collection of sixty cases from various sources seventeen were healthy; thirty-six lacerated or inflamed; in seven, the nerve trunk was more or less injected.

Spinal cord.[4]—In four cases the specific gravity of the spinal cord was increased in tetanus. "A change is suddenly indicated about the region of the cord which is in immediate communication with the wounded part; and in idiopathic tetanus the change is universal throughout. In one case, where the wound was on the occiput, the uppermost three inches were of the highest specific gravity, and the difference became suddenly manifest at the fourth inch." In another case the difference was suddenly marked where the roots of the cervical and first dorsal nerves left the cord to form the brachial plexus. "In another case the difference was suddenly manifested in the lowermost part of the cord, corresponding to the region where the nerves were in communication with the lower limbs, which were the seat of the injury."

FIG. 3. *Section of Medulla of a patient who died of Tetanus.*

A, Hypoglossal nucleus. B, Portion of medulla forming part of the fourth ventricle. C, Greatly distended vessel. E, Fibres from hypoglossal nucleus. F, Very fine amorpho-plastic material between vessel and nerve substance.

The various pathological changes wrought by this disease in the cerebro-spinal nervous system can, to a great extent, be accounted for. The process of inflammation is not a simple one, but the result of many gradual processes; so that if we consider tetanus, as some consider it, to be a central myelitis, it would in a great degree depend upon the time that had elapsed from the time of injury, and the intensity of the disease, whether or no death took place during the first period, that of vascular spinal engorgement, or during the period of leucocytal infiltration, or that of subsequent pus-corpuscular formation in the perivascular spaces and adventitia, and even to the granular and other degenerative changes so constantly observed and described. This morbid change in the blood-supply causes the nerve-fibres to—first, become atrophied; secondly, in some cases to entirely disappear; and, thirdly, replaced by granular and other degenerations. From my own observations I find these most important changes in the vessels as before described in the neighbourhood of the central canal and the posterior columns. The tide of blood altered in quantity, and most probably in quality, causes such an amount of excitement among the ganglionic nerve-cells in the spinal cord and medulla, and the nerve-storm thus raised so increases the spinal polarity that the inhibitory authority of volition is for a time suspended, and exalted reflex action reigns supreme. In traumatic tetanus this increased spinal polarity commences in the afferent nerves of the part that is the seat of the wound; from the seat of peripheral irritation this

[4] Lawrie's paper, quoted by Reeves, p. 370.

morbid condition is propagated through the nerves to the centres. Brown-Séquard[5] inferred that, all other things being equal, where there is general excitement of the vascular and increased activity of the nervous system, involuntary reflex action phenomena should perhaps, after the application of a slight stimulus, first arise in the part in which the vascularity is greatest, and where the natural capacity for reflex phenomena is strongest—namely, in the medulla oblongata. That this inference was correct he subsequently proved by experiment, the most noticeable fact being that the capacity for convulsive movements did not take place for some days after the injury to the animal. In 1853, Pflüger[6] demonstrated from numerous experiments that the path of reflexion of a sensitive nerve varies, being, on irritation of a sensitive nerve of the brain, reflected from *above downwards* towards the medulla, whereas on irritation of a spinal nerve it is reflected from *below upwards* to the medulla.[7] Hence, if the reflexion occurs in motor nerves lying very distant from the irritated sensitive nerve, the reflectorially excited motors are always such as arise from the medulla oblongata, and it is therefore not until the irritation has reached the medulla that the reflex movements can pass to the other side and extend over the whole body. But if the irritation of the medulla is not too great, it may, when it has reached the medulla, extend over the body, but only on the same side. Consequently a higher degree of irritation is necessary for the transference of the spasms to the opposite side than for their extension on the affected side; therefore tetanus is a result of a greater irritation than that by which intermittent spasms and convulsions are excited. Brown-Séquard asks why is there such a variety of alterations produced in one and the same part by an excitation which varies only in intensity? Physiology, morbid anatomy, and clinical observation, he says,[8] clearly point out that all nervous affections (organic and functional), as well as affections of any other part of the body, owe their production to the following three fundamental causes:—1. A special inherent tendency (inherited or not) of the elementary parts of the tissues to become altered in one or in another way. 2. The production or introduction in the blood of those materials which are necessary for the formation of morbid growths, or able, like poisons, to cause alterations of nutrition or secretion. 3. An influence of an excitation from outside acting with or without the intervention of the nervous system, or a purely nervous influence starting from a peripheric or a central part of the nervous system. "If," says the same author, "we keep in mind the truth that these three causes may exist together and in various degrees, we can easily understand how the same excitation of the same nerve may produce in the same distant part different kinds of alteration of nutrition. It is so that an irritation from a wounded nerve will produce either tetanus or chorea or catalepsy or epilepsy or delirium, and, by a reflex action on a peripheric part, muscular wasting or trembling, a contracture, a neuralgia."

The reflex excitability of the cerebro-spinal centre may take place from apparently opposite causes, such as a great increase of blood, as in congestion, or poison of hydrophobia, on the one hand, or the poison of atropine, great loss of blood, or the chlorotic condition, on the other.

In traumatic tetanus, that of nerve irritation, as constituting the cause, is exceedingly tenable, since it has been proved by the carefully conducted experiments of Weber and Heidenhain that slow irritation of nerves by special methods does produce tetanus. Whether in idiopathic tetanus its cause is owing to some blood change brought about by exposure to cold, and giving rise to a poison, say, similar to rheumatism, which has its seat of election among the spinal and medullary ganglionic cells, instead of, as the rheumatic poison, the joints, it is difficult to say; but, full well knowing what the various effects of cold are,[9] varying no doubt as the constitution of the individual, I do not think such an effect impossible, considering, as I have before shown, what various causes will increase reflex excitability of the cerebro-spinal nerve-centre.

To sum up, therefore, I consider tetanus to be a disease which may be produced not by one but several causes, which, when once set up, lead to the following changes:—

(*a*) Enormous dilatation of bloodvessels in the medulla, particularly in the neighbourhood of the hypoglossal and pneumogastric nuclei; and in the spinal cord, especially around the central canal and the portion nearest the seat of injury, the part in which colloid bodies are usually noticeable.

(*b*) Leucocytal infiltration in the same regions; but, according to Dr. Gowers, who has examined my microscopical slides, much more uniformly distributed than in hydrophobia.

(*c*) Granular and subsequent changes, the result of malnutrition, and most noticeable in the posterior columns, and varying according to disease-duration.

N.B. These microscopical deductions are from an examination of four cases.

That this condition is—

(*a*) Associated with an exalted action of the ganglionic cells, originating in a point of the cord nearest the seat of injury, and extending upwards towards the medulla, the central seat of bilateral reflex action.

(*b*) That the blood destined to supply the rapid ganglionic metamorphosis in the medulla is either altered in quantity and quality or in both.

(*c*) The ganglionic cells of the medulla, not receiving their blood-nutriment in proper quantity or quality, can no longer supply that nutritive force which is so necessary for the proper and healthy performance and maintenance of its vital functions.

[5] Comptes Rendus, 1856, No. 3, Jan., p. 86, et seq., and Oct. 11th, 1856; No. 91, p. 664; and Archives Générales de Médecine, 1856, Février.

[6] Die sensorichen Functionen des Ruckenmarks, p. 74; Berlin, 1853.

[7] Van der Kolk: Uber die Textur und Function der Medulla Oblongata (Sydenham Society), p. 222.

[8] Diagnosis and Treatment of Functional Nervous Affections, p. 22.

[9] Take a number of individuals exposed to the same cause—viz., that of cold,—and witness its various effects: giving ptosis in one, arteritis in another, nephritis in another.

INTESTINAL OBSTRUCTION.

BY J. A. AUSTIN, M.B.

THE following case, viewed side by side with a somewhat similar one reported from Cardiff, in THE LANCET of 9th February last, may be interesting and instructive as well by its points of divergence from, as by its resemblance to, that case; and illustrates the uncertainty and caprice which occasionally mark the individual history of intestinal obstruction.

The subject was a lad, aged eighteen, a baker's assistant. He was small for his years, not appearing older than fifteen, with sharp angular features. Had been subject since childhood to recurrent attacks of severe colicky pains, accompanied by more or less constipation. On the 21st January last the pain attacked him with greater severity than ever. Turpentine fomentations, which hitherto had never failed to give relief, were now resorted to in vain, and the patient was literally frantic with pain. Shortly afterwards frequent vomiting took place. A draught of chlorodyne was given, and it composed the sufferer to sleep, procuring him an hour or two's respite from what appeared to be terrible torture. On awakening, the pain gradually returned. Enemas, repeatedly used, were promptly rejected without effect.

The patient was now put upon morphia, of which a single dose of half a grain proved sufficient to moderate his agony, and maintain him in a state of comparative comfort for two consecutive days and nights, and sometimes longer, for which he appeared very grateful. At the same time, essence of beef and brandy were employed to support the flagging powers. The further use of the enema was avoided on principle.

This plan of treatment was pursued in the hope that, if life and strength were sustained, and the injurious consequences to the nervous system of repeated and intense paroxysms of pain staved off, the patient being young, nature might yet effect a cure. This hope was not altogether unfounded, for on the 5th February, fifteen days after the commencement of the illness, the escape of a large amount of flatus announced the patency of the canal. The pain and abdominal distension were sensibly diminished. On the following day the bowels were repeatedly, naturally, and amply evacuated. All was now going on well, and recovery confidently anticipated. To our great surprise and sorrow, however, a relapse occurred on the 10th February, with aggravated repetition of all the symptoms, particularly the tympanitic distension. Enemas, were resumed, but with the same results as before. The patient gradually sank,

and expired on the 16th February. The pain was referred to the neighbourhood of the navel, and the temperature remained normal throughout.

Tongue, Sutherlandshire.

A CASE OF GREAT DESQUAMATION OF THE SKIN AFTER AN ATTACK OF ACUTE PNEUMONIA.

BY G. JORDAN LLOYD, M.R.C.S.,
HOUSE-SURGEON, QUEEN'S HOSPITAL, BIRMINGHAM.

ALLOW me to submit the following case to the consideration of the profession, as one which scarcely accords (to my mind) with the doctrine, almost universally believed, that there is only one acute febrile disease which is followed by a well-marked desquamation, and that disease is scarlatina.

On the afternoon of October 4th last, whilst residing in a large provincial hospital, I was seized by a rigor, which preceded a characteristic and severe attack of acute croupous pneumonia. The temperature chart, the relative rates of pulse and respiration, the physical signs, the state of the urine, and the expectoration, were undoubtedly those distinguishing this condition. The crisis, which came upon the eighth day, followed a great fall in temperature and a profuse sweating. On the day ensuing there appeared about the clavicles and upper part of the chest a thick crop of sudamina; the vesicles were about one-third of a line in diameter, elevated and transparent. During the next two or three days this miliary rash had spread over the whole body—neck, face, abdomen, and extremities, in the order enumerated. Upon the fifth day of the eruption on the trunk it presented very much the appearance of confluent small-pox. The itching accompanying this rash was almost unbearable. The vesicles dried up and disappeared towards the ninth or tenth day, and were followed by an unmistakable desquamation, which occurred upon the parts in the same order as the rash had appeared. The epidermis was shed in flakes, varying in size from a mere shred to that of the palm of the hand; these latter were thrown off only from the feet. Desquamation was not complete until nearly two months after the first appearance of the eruption.

It may, of course, be urged that my condition was one induced by the scarlatinal poison, but modified by other co-existing factors. I can only reply in answer to this that (1st) there was no scarlatina in hospital at the time, and I had not exposed myself, to the best of my belief, to infection elsewhere; (2nd) the rash, which in scarlatina sometimes assumes a vesicular form, did not commence to "come out" until the ninth day after the onset of fever; (3rd) the temperature fell nearly to normal on the day previous to the appearance of the eruption, and did not rise afterwards; (4th) there was neither redness, swelling, nor soreness of the throat present; (5th) there was no albuminuria or kidney complication of any kind; (6th) no case of scarlatina followed in the house, although no precautions were taken to hinder the scattering about of the desquamatory products; (7th) I had had an attack of scarlatina during childhood.

Taking all these circumstances into consideration, together with the low state of health I was in at the time immediately preceding my illness, and the fact that I had recovered from an attack of hospital sore-throat only a few days prior to the rigor which ushered in the pneumonia, I think I am justified (as is also Dr. Heslop, who so kindly attended me) in looking upon my condition as one induced by some septic state of the blood, rather than a manifestation of the scarlatinal poison.

Birmingham.

ROYAL COLLEGE OF SURGEONS IN IRELAND.—An election takes place this week of six examiners for the diploma in dental surgery, three of whom it is arranged shall be Fellows of the College, and a similar number dentists registered under the Dentists Act. The first examination for the diploma will be held on the 7th inst. and following days.

A Mirror OF HOSPITAL PRACTICE, BRITISH AND FOREIGN.

Nulla autem est alia pro certo noscendi via, nisi quamplurimas et morborum et dissectionum historias, tum aliorum, tum proprias collectas habere, et inter se comparare.—MORGAGNI *De Sed. et Caus. Morb.*, lib. iv. Proœmium.

LONDON HOSPITAL.

HYDROPHOBIA; INCUBATION FIVE MONTHS; DELIRIUM WITH CONSCIOUS INTERVALS; PAIN EXTENDING FROM BITE ALONG THE ULNAR NERVE; SUBCUTANEOUS AND ANAL INJECTIONS OF CHLORAL HYDRATE; EXCISION OF A PORTION OF THE ULNAR NERVE; DEATH SIX DAYS AFTER ONSET OF SYMPTOMS; NECROPSY.

(Under the care of Dr. SANSOM.)

FOR the following notes we are indebted to Mr. B. W. Walker, house-physician.

Walter James T——, aged fourteen, was admitted on Aug. 13th, 1877, suffering from hydrophobia. The sister gave the following history. The patient was always delicate-looking, but was merry and cheerful, and had had no serious illness. About five months before admission, while attempting to separate his own and another dog from fighting, he was bitten by the strange dog on the back of the left hand. Although the wound was very slight, the lad was at once taken to a neighbouring practitioner, who within ten minutes cauterised it with nitrate of silver. The wound healed in two days, and no further notice was taken of it. The lad returned to work as a shop boy after an absence of two weeks. He remained in his usual health until August 6th (Bank holiday), when he sprained his left arm slightly while struggling with a playfellow. He did not complain of this, and used this arm as well as the other when rowing on the river the same afternoon. Three days later, however, he complained of pain and stiffness in this arm, obliging him to leave his employment. He remained at home, and, excepting the pain and stiffness in the arm, appeared as well as ever until the night of Aug. 10th, the fifth day after the sprain. His appetite was only noticed to fail on Aug. 10th. On Aug. 11th (evening) his sister had great difficulty in persuading him to take some medicine (administered on account of the pain in the arm). He could not take it, though he tried hard; he would not allow his sister to assist him. There seemed to be a "stop" in his breath when he tried to drink. He complained, after trying some time to take the medicine, that his breast pained him. Eventually, however, he swallowed the medicine. Having been put to bed, he remained very quiet, but did not sleep all night, and at 5 A.M. next morning (12th) "he would get up." He dressed, went downstairs, and opened the street door. His friends got him to lie down again quietly, but, after a couple of hours, he was up again, wandering restlessly about the house, and wishing to go out of doors. During the day he was constantly on the move, and after mid-day was noticed to be strange in his sayings, rambling in his talk concerning his employment. Towards evening these symptoms became much worse. His friends did not know what to do with him, or how to quiet him; he was not violent. His condition remained the same until the afternoon of the following day (13th), when he was taken to the hospital.

When first seen on Aug. 13th he had some slight flushing of cheeks and duskiness of the hands. There was a bluish scar on the back of the left hand, of the shape and size of a section of two rice-grains placed close together. He had a very excited manner. There was a very marked "catch" in breathing at times. Very severe respiratory spasms were produced on attempting to drink, or if a breath of air suddenly came in contact with his skin. This appeared particularly induced when one blew upon the hand which had been bitten. He tried hard to drink when the vessel was put into his hands. After deliberating a long time until some slight spasms had subsided, he threw the whole amount of fluid given him into his mouth, and then made repeated vigorous attempts to swallow it. The spasms

excited were, however, so severe, that after some seconds of tonic contraction, interrupted by slight clonic contractions, the whole of the fluid burst out of his mouth. He appeared extremely suspicious of every movement made by others, and seemed to fancy that attempts were being made to cheat him. He said to the nurse, "Oh, you're a cunning old thing." He had all along been more or less delirious, and lately had shown signs of violence. He threatened to scream. He said, "I shall scream." "If you are not careful it will be the worse for you." At 6 P.M. he had a hypodermic injection of ten grains of chloral hydrate; at 7.30 P.M. an enema of forty grains of chloral hydrate. This was repeated at 10.30 P.M.

14th.—At 1 A.M. the patient had a hypodermic injection of fifteen grains of chloral hydrate. At 2.30 A.M. he got out of bed (having been sleeping quietly since the second hypodermic injection took effect) and walked round the room. He had muttering delirium. His face was much flushed, his lips were dark, and there was a peculiar vacant stare about his eyes. There was a small slough over the seat of the hypodermic injection. The patient readily obeyed when told to lie down to receive an enema of twenty grains of chloral hydrate, and he slept almost immediately afterwards, his sleep lasting until 7.45 A.M., only turning over once or twice during the time. He continued to doze for half an hour after he awoke. He then said that his head felt as if there were coals of fire inside, and he groaned constantly. He turned over when told to do so, and lay quiet whilst an enema of thirty grains of chloral hydrate was given. There was great exhaustion and weakness; pulse small, quick, very compressible. There was still well-marked catching of the breath, and spasm on irritation as before (no spasm whilst the enema was being given). Delirium of a quiet kind also existed. He answered questions rationally, even when roused up suddenly. He knew he was in the hospital; said that he remembered the nurse coming to him during the night, and that he felt better, but was very weak. At 9 A.M. he was sleeping heavily; the cheeks were darkly flushed; pulse full, compressible; sordes on the lips. At 10.40 A.M. the temperature was 102·3°. The patient had just aroused (of his own accord), and asked for some iced water. He took a good deal of ice, which produced mild attacks of the spasm as before. He now talked of their dog at home, and said—"I thought I saw our dog. No! I'm not fond of *him*—it's *he* that's fond of *me*; he's always glad when he sees me; he keeps jumping up around me and cuddling me." He also said, "I feel very tired." The boy seemed exceedingly drowsy, and fell off to sleep at the moment. Very restless; pulse 120. The dusky, flushed face was very well marked, and there was the curious fixed stare in his half-open eyes. He was much exhausted. Thirty grains of chloral hydrate were given by enema. When the nurse was about to administer this, he turned over, saying "This way, nurse." He remained quiet afterwards. At 1 P.M. he was still sleepy, but restless, took ice gladly, though it caused slight but typical spasm. At 2 P.M. had thirty grains of chloral hydrate by enema. This was repeated at 9.45 and at 10.15 P.M.

15th.—Enemata of chloral hydrate were given at 1.15 and 2 A.M., but were not retained; they were repeated whenever the patient seemed restless. At 9 A.M. the condition remained the same. On one occasion, however, during the night, he was much excited and inclined to be violent. He was evidently very much exhausted. After chloral he had good long periods of quiet sleep. From 2 to 9 A.M. the rest was undisturbed, and he was very drowsy afterwards. At 11 A.M. the prostration was great. There were quiet muttering delirium, cold extremities, rapid, small, compressible pulse, great congestion of face, and general slight dusky-blueness of skin of body. It was thought the inhalation of a little nitrite of amyl might relieve the congestion and soften the pulse. This, cautiously tried, however, appeared to impair respiration and diminish its frequency. The pulse became more rapid, and slight pallor of the face was observed. No good result appeared likely, although the expression and colour were much improved. He asked for tea, and when given milk he swallowed two mouthfuls and said he wished for tea—he "would like a cup of tea." He answered questions rationally, but wandered in his talk at intervals. When his sister came to see him he at once recognised her, and said, "I am soon going to get well." He moreover inquired after their dog, calling it by name, and said: "I shall soon be well enough to take it for a walk again, but the other was a nasty dog. It is so kind of you to come to see me." The friends observe a marked improvement this morning. At 3.30 P.M. he asked for and took nine teaspoonfuls of milk. There was catching of the breath, but no typical spasm. At 6 P.M. he took by mouth half a teacupful of tea and milk. He complained much of pain running up and round his left arm, starting from the wound; the pain reached as far as the elbow, with a sensation of "pins and needles." He also complained of pain about the left shoulder, and tenderness in the region of the wound. This pain was relieved by direct pressure on the ulnar nerve, behind the internal condyle. It was also subdued by chloral camphor. At 8.15 P.M. the pain in the arm recurred on cessation of the rubbing with camphor chloral. An enema of ten grains of chloral hydrate was given. The pain was not relieved by the application of an Esmarch bandage, which troubled the patient much. Pads could not be fixed over the nerve. At 8.45 P.M. an enema of thirty grains of chloral hydrate was given. Patient speedily fell asleep; the pupils were dilated, but active; respiration steady, deep, and quiet, 27; pulse full, strong, and regular; no undue flushing or congestion of surface; extremities warm. On irritation an occasional deep sigh or catch in respiration occurred. At 11.30 P.M. it was determined that the ulnar nerve should be divided, and the scar on the hand removed, and further, that the administration of chloroform should be attempted. Immediately on its application, however, the patient ceased breathing, and turned to a cadaverous tint, with a feeble, fluttering, intermittent pulse. The superficial veins became greatly distended, the eyes staring, and the pupils widely dilated. A dash of cold water caused a gasp or two after a very uncomfortably long pause. Artificial respiration did no good. After about a minute a few gasping respirations occurred. Afterwards breathing was more regular, though interrupted with much gasping; the face became flushed; the eyes remained staring and quite fixed. An incision was now made along the course of the ulnar nerve, behind the condyle, an inch and a half long. The nerve was exposed, and about a quarter of an inch was removed. An oval incision was next made round the scar on the hand, and the whole removed. There was no bleeding. Both wounds were closed by continuous sutures, and dressed with carbolic oil and lint. As the sutures were being put in the patient called out, thus giving the first sign of returning consciousness. After the operation the pulse remained irregular, at times full and strong, at others small and feeble. The breathing was shallow and rather rapid, and inspiration was interrupted by frequently recurring gasps; the colour was good; eyes staring, fixed, and glazed. After a hypodermic injection of sulphuric ether the pulse became regular, and the catch in the respiration ceased.

16th.—At 1.30 A.M. the breathing had become much steadier—30, only accompanied by a slight gasping. A draught of air on the surface of the skin or a slight touch was sufficient to cause a sigh, by which the true spasm was replaced. The patient was rather restless. He moved his eyes, and answered questions when roused. He said he had pain in his chest, but none in his arm. He had shown no sign of consciousness since 8.45 P.M. on the previous evening. An enema of twenty grains of chloral hydrate was given. There was occasional slight spasm of the muscles of the neck, both laterally and posteriorly. The head was thrown back. There was no opisthotonus. The upper lip was drawn up. The limbs were unaffected. At 3.40 A.M. he was still restless, but quite conscious: said he had not much pain. An enema of twenty grains repeated. After this he dozed off to sleep. At 5.30 A.M. he awoke; asked for tea; said he was very thirsty. Though he swallowed with difficulty, he took five teaspoonfuls of tea. He soon became restless, and complained that the bed was hard in one place where the sheets were ruffled, and complained of pain in his back. He said he would get up, and wanted to do so. He had a tendency to roll out of bed. The pulse was soft, quick, and compressible; respiration regular, but still much interrupted by gasping. At 6.50 A.M. thirty grains of chloral were given by enema. The patient soon dozed and fell asleep. He slept steadily. Breathing was good—36, not interrupted. His colour was good. Pulse full, soft, rapid, compressible, but not weak; regular, 150. Temperature 100°. Skin moist, no perspiration. Blowing on the surface of the hand had no effect, but blowing into the ear was followed by a marked gasping which roused the patient. The concentrated extract of beef (digested artificially with pepsin) was now used for enemata. At 10.50 A.M., enema of thirty

grains of chloral hydrate was given. At 6.30 P.M. twenty grains were given, but were not long retained. At 8.40 P.M. thirty grains were given, and the boy swallowed a little beef-tea. At 11.20 P.M. fifteen grains were given.

On Aug. 17th, at 1.45 A.M., he had twenty grains of chloral by enema, but it was not long retained. He afterwards slept well, was very quiet, and spoke rationally. At 8.40 A.M. his pulse was very small and rapid; his breathing shallow; his face pale. His right arm and hand were cold, but the left, and the rest of the body, were very hot to the touch. Enema of twenty grains of chloral was given. He took four teaspoonfuls of liquid extract of beef by the mouth; but this interfered with his respiration to an alarming extent. He vomited a little mucus, accompanied by frequent eructations. No urine had been passed involuntarily since the previous evening. The bladder was not distended, as evidenced by percussion. He now passed into a quiet sleep. The pulse varied very much from minute to minute. At 10 A.M. an enema of fifteen grains of chloral was given. At 11 A.M. his face generally was pale, but the prominences of his cheeks were exceedingly flushed, with a very distinct and abrupt margin to this redness. He was now rather restless, moaning constantly, but seemed comfortable otherwise. His pulse was good; his respiration easy. At 1 P.M. he had an enema of twenty grains of chloral, which was retained only by means of a pad for about two hours. No more chloral was given, but nutrient enemata were continued.

On Aug. 18th, at 10 A.M. the patient died, quite exhausted.

Necropsy, six hours after death.—The body was a good deal wasted, but not emaciated; rigor mortis slight; body still somewhat warm. No noticeable changes in mouth, pharynx, or larynx. No abnormal development of follicles at base of tongue and contiguous parts; mucous membrane not congested.—Lungs: The base of the left lung was adherent to diaphragm and posterior part of thorax. At one point in this lung a square inch or so of pleura had some moderately recent, but organised, lymph upon it. Both lungs were emphysematous, especially at anterior and upper parts. The lower part of the right lung differed from the remainder of the lung in presenting, when cut, a remarkable appearance, which was due to minute, roundish, dark-red, almost black, points projecting above the surrounding lung-tissue. These red points were granular. Between the fingers the lung containing these patches felt nodular. A little dark blood oozed from the cut lung, but comparatively little could be squeezed from it.—Heart: The visceral pericardium was thickened and opaque in several places over both ventricles and over the auricles—the result apparently of former pericarditis. Scattered about the pericardium were numerous minute punctiform ecchymoses. No lymph was seen. The left ventricle was so firmly contracted that its cavity was completely obliterated. The right ventricle, moderately distended, contained a good-sized coloured coagulum, which extended into the pulmonary artery, and besides an almost decolorised clot adherent to the carneæ columnæ. The valves and orifices of the heart were healthy, but the endocardium had a milky aspect, as though perhaps a little thicker than normal. The liver was natural in appearance, and presented no noteworthy changes on section. The gall-bladder contained a large quantity of very dark but fluid bile. The spleen was firm and round; when cut its section was dark, and the edge was sharp and firm. The kidneys were of natural size and appearance; presented no changes beyond distended veins of pyramids and stellate veins on surface. The stomach was moderately distended, contained some dark, brownish-black, tar-like fluid. The mucous membrane, in thickish folds, was covered by tenacious oily and soapy-feeling mucus. When washed it was seen that the surface was in many places studded with minute extravasations. These were especially marked at the edges of folds of mucous membrane, from which it may probably be inferred that the latter had some persistence in this present form.—Intestines: A small portion only of the ileum was examined; the solitary glands stood out with distinctness, and were surrounded by a zone of congestion. The bladder was distended so as to reach a few inches above the pubes.—Brain: Subarachnoid fluid in excess. Venous congestion on surface of brain. Brain-tissue of naturally firm consistence. No noticeable change in any part of the encephalic nervous tissues. All parts were carefully examined.—Spinal cord: No naked-eye changes. Consistence good. No difference observed in the cervical enlargement as compared with remainder of cord. No peculiarity noticed at the roots of the spinal nerves which go to make up the brachial plexus. The firmest part of the cord was the lumbar enlargement. The subarachnoid fluid was in excess.—Left arm: There was an incised wound behind the elbow, which had been made to cut out a portion of the ulnar nerve during life. Starting from this point there was found diffuse suppurative cellulitis, extending, especially at the back of the arm, as high as the axilla. The ulnar nerve, which was found divided just above the elbow, presented evidences of inflammation; it was swollen and discoloured, of a dirty-red tint. The axillary glands were swollen when cut into; most of them contained hæmorrhagic extravasations. One was distinctly suppurating, and pus from it was seen under the microscope. The glands in the opposite axilla were examined, but presented scarcely any alterations, contrasting markedly with the glands from the left axilla. It is worthy of note that the left arm did not appear swollen, and the very decided cellulitis might have escaped notice had not the part been examined and dissected.

Remarks by Dr. SANSOM.—It is unnecessary to call attention to the clinical features of the case, as these are sufficiently set forth in the notes. The chief points calling for comment are—(1) the early and late pain starting from the wound, and extending chiefly in the course of the ulnar nerve; (2) the protraction of the case, after the onset of characteristic symptoms, beyond the ordinary duration; (3) the treatment adopted. The prodromic stage was chiefly marked by pain extending from the wound. Seeing the good result which had attended nerve-stretching in tetanus—a disease which I have long regarded as having a strong analogy with hydrophobia—I considered the feasibility of exposing and stretching the nerve-trunk in this instance. The immediate treatment, however, had mitigated the painful symptoms. It is quite certain that the administration of chloral hydrate by subcutaneous injection and by enemata kept the patient in a condition of comparative calm, and contrasted very favourably with a former case of mine in which morphia was hypodermically administered. Towards the later periods of the case, however, severe pain reasserted itself, and the question of surgical treatment of the nerve again came to be considered. Mr. McCarthy preferred excision to stretching, and it was apparent that after the operation a great source of suffering was eliminated. Could we say more? Unfortunately cellulitis occurred around the sheath of the nerve, no doubt predisposed to by the low state of the patient. I am inclined to think that when the injury is near a defined nerve-trunk, stretching or excision in the prodromic period would be desirable. Though chloral was highly beneficial, it was as distinctly proved that the inhalation of chloroform was dangerous.

NORTHERN HOSPITAL, LIVERPOOL.

RUPTURED PERICARDIUM; FRACTURED PELVIS AND RUPTURED URETHRA.

(Under the care of Mr. PUZEY.)

FOR the notes of the following interesting cases we are indebted to Mr. James Allan, house-surgeon.

R. M——, aged forty-eight, was admitted on Feb. 27th, 1878, having been knocked down and crushed by a bale of cotton striking him on the back. The diagnosis was, fracture of both pubic bones, with rupture of membranous urethra. There was considerable hæmorrhage from urethra; extravasation of blood slight. He complained of great pain in the cardiac region; and had an incessant painful cough and a markedly anxious expression.

A broad belt was firmly applied round the pelvis, a gum-elastic catheter was tied in the urethra, and a stimulating expectorant mixture was given.

For a week after admission there was considerable rise of temperature. Examination showed slight pneumonia. The patient would take only warm fluids. The catheter was removed on the 6th March, and he could then pass water without difficulty. Temperature became quite normal on the 10th March, and continued so until the 25th, when pleurisy and pericarditis developed; and he died on the 27th, a month after admission.

Necropsy.—Thorax: There was recent pleurisy in both pleuræ. The right side contained six ounces of serum, the left three ounces, and there was effusion of lymph over a large extent of both lungs. There were œdema and congestion of the lungs. The pericardium showed evidence of

a rent through its whole length on the left side. The state of parts was as follows:—On removal of the sternum nothing abnormal was noted, but on trying to raise the anterior part of left lung from the pericardium, it was found to be adherent by its anterior margin, and inferiorly was thinned out and insinuated around and behind the apex of the heart. These adhesions were readily broken up by the finger, and then entire absence of pericardium proper from the left side of heart was manifest, the internal surface of left lung acting as pericardium. It was now seen that the anterior margin of the left lung had adhered to the retracted right border of the pericardial rent; and that the left side of the ruptured pericardium appeared as a band three-quarters of an inch broad, running parallel with the long axis of the body, behind about the middle part of the heart, and presenting a free border. The portion of lung pleura in contact with the left side of the heart had not undergone any alteration in appearance. In this improvised pericardium there was over an ounce of turbid serum, and there was a layer of recent lymph on the heart and parietal surfaces.—Abdomen: There was fracture of both pubic bones, each being separated into three pieces, and the pubic part of acetabulum was fractured without displacement. Union was pretty firm, and there was a large amount of callus. There was separation of the left sacro-iliac synchondrosis, with fracture of the left ala of the sacrum. There was blackening of all the parts in false pelvis. A clot lay behind the posterior wall of the membranous urethra, and there was evidence of slight rupture in the posterior wall. The kidneys together weighed 12 oz.; the liver 4 lb., and was fatty.

RUPTURE OF COLON.

(Under the care of Dr. CAMPBELL.)

J. M——, aged fifty-one, labourer, was admitted at 9 A.M. on May 9th, 1878, and died in twenty-four hours. He had had a fall of about twelve feet into a ship's hold, striking the right side against a projecting beam. There was bruising over the right hip, pain in the right iliac region of an intensely agonising character; there was no pain in the back nor in the liver region; urine did not contain any blood. Pulse 72, of fair strength. Was ordered morphia hypodermically. At 2 P.M. pulse 102, feeble; patient blanched; large doses (half-grain) of morphia had taken no effect. At 11 P.M. pulse 120; temperature 100·4°; had vomited slightly once; great thirst. Although the administration of morphia was pushed as far as possible, pain did not seem to be relieved; the patient kept calling out from pain; but this was greatly relieved on stopping abdominal respiration.

Necropsy.—The abdomen contained two pints of fluid blood mixed with fæcal matter. On the free surface of the small intestines lying towards the right side of the abdomen there was a number of abrasions, and these were covered with a thin layer of coagulated blood. The anterior surface of the ascending colon presented near the cæcum a rounded opening of size sufficient to admit the forefinger. Cæcum and greater part of colon empty; the opening was quite patent; great bruising of the parts behind the ascending colon No rupture of any other viscus, nor fracture of bone.

SEPARATION OF LOBES OF LIVER.

(Under the care of Dr. CAMPBELL.)

H. R——, aged thirty, admitted March 13th, 1878; died an hour after admission. About an hour previous he got caught, and crushed between two buffers. Great pallor and collapse on admission; intense pain referred to epigastrium.

Necropsy.—The abdomen contained about four pints and a half of fluid blood. The liver weighed 49 oz. There was complete separation of the left lobe of the liver from the right. The detached lobe was displaced to the left, and was attached only by fascia and peritoneum. A large hepatic vein was laid open, and from this blood welled out. On the upper surface of the right lobe, running transversely near the posterior border, there was a fissure three inches long, half an inch deep in the middle, and becoming shallow at both ends. Slight laceration on convex surface of spleen; weight, 6 oz. The heart weighed 10 oz., empty and contracted. Bladder empty, intact.

CARMICHAEL SCHOOL OF MEDICINE.—Mr. Barton, lately attached to the Ledwich School of Medicine as one of the lecturers on Surgery, has resigned, and will act as the senior lecturer on the same subject in the Carmichael School.

Reviews and Notices of Books.

Traité d'Hygiène Publique et Privée. Par A. PROUST, Lauréat de l'Institut, Agrégé Libre de la Faculté de Médecine, Médecin de l'Hôpital Lariboisière, Secrétaire-adjoint du Comité Consultatif d'Hygiène Publique de France. pp. 840. Paris: G. Masson.

DURING the inquiries which in the course of last year we instituted into the sanitary condition of Paris we were struck by the curious inequalities, if not of Parisian knowledge, at any rate of Parisian practice, in the science of hygiene. The large volume now before us reflects this inequality perfectly, and appears to prove that in some matters the sanitary knowledge of France is somewhat behind that of England.

Let us begin by admitting in the fullest manner the value of M. Proust's book. It is, as far as it goes, admirable, alike in matter, style, and arrangement. It is crowded with useful facts and generalisations; in some chapters it is fuller and better than anything we have in England; and, above all, it comes from the pen of one whose high reputation entitles him to speak with authority. The defects are mainly those of omission, and can easily be rectified in the next edition. The merits strike us in every page. Some things are omitted that every English physician is familiar with, but, on the other hand, the book contains much that is not so well known, and that will be studied with profit in every civilised country.

Parts 1 and 2 are devoted to Anthropology and Demography. Under the latter heading we have statistics of population, births, deaths, and marriages, with discussions of the various influences which affect them, and analyses of the figures. These statistics, though referring mainly to France, are constantly compared with those of other countries, and possess much general value.

In Part 3 man is considered as an individual, the great bulk of it being devoted to the influence of professions and other occupations on health. This is certainly one of the most, valuable portions of the work. The governmental classification of industries in France, and the systematic inspection of all which are likely to interfere with public health, afford valuable help in such a study, and we can only regret that similar material does not exist in England. Our national carelessness in regard to noxious trades and noxious materials is a disgrace to us, and we fear there is but little sign of its passing away.

Part 4, on the Air, contains much that is useful, especially in regard to suspended solid matter. It is a pity that Pettenkofer's excellent and simple method of estimating carbonic acid was not described.

Part 5, on Food, is exceedingly imperfect, partly from the limited space available, but partly also from want of familiarity with recent English research. For example, Frankland's determinations of the calorific value of different articles of food are not noticed, although they form the only satisfactory bases at present available for the calculation of the comparative work-value of dietaries. So with regard to the detection of adulteration. The methods given are in nearly all cases imperfect, and in some quite obsolete, the author apparently not having studied the proceedings of our Society of Public Analysts, in which so many new and improved processes have been described.

But it is in the next Part (6), which deals with Water, that the author's want of familiarity with modern English methods becomes most apparent. The modes of analysis which he describes are almost absurdly inadequate and old-fashioned. Apparently he has not heard of the labours of Frankland and Armstrong, or of the method of Wanklyn. No allusion is made to the results of the Rivers Pollution Commission, the Commission on Water-Supply, or any other of the great national inquiries upon which so much of our

knowledge is based. Slight allusions to the A B C and one or two other processes for the purification of sewage occur, and a short account of the Lodge Farm experiment is given. But the discussion on sewage-disposal, as on water-supply, is exceedingly meagre, and represents at best the standpoint of knowledge which England had reached a quarter of a century ago.

The following Parts (7 to 14) on Clothes, Baths, and Gymnastics, on Private and Public Buildings, on the Hygiene of Towns and Villages, on Climatology, on Infectious and Contagious Diseases, and on International Hygiene, are in the main excellent, and contain much that will be read with profit by all. The chapters on Hospitals and Maternities are especially interesting. In the chapters on Zymotic Disease, however, one of the gravest defects of French hygiene receives illustration. We had occasion to point out, in our Reports on the Sanitary Condition of Paris, the singular backwardness of the French authorities in the matter of disinfection. This backwardness would seem to be shared by the medical profession, for in the work before us, excellent as it is in many respects, we find very little indeed on the subject, and absolutely no practical details. The efficacy of dry and moist heat, the comparative advantages of sulphur, chlorine, carbolic acid, and the many other disinfectants and antiseptics used in England, and the conditions under which these various agents must be used in order to secure safety, are nowhere discussed. This, with the imperfect information given in regard to water and food, appear to us the gravest defects in what, with all its faults, is a truly valuable work.

OUR LIBRARY TABLE.

Anatomical Outlines, for the Use of Students in the Dissecting-room and Surgical Class-room. By ARTHUR HENSMAN. Part I. The Upper Limb. London: Longmans, Green, and Co. 1878.—The idea of this work is good, and it is one which should become popular among students. It consists of a series of well-executed outline figures of the upper limb, the surface contour and the bony skeleton alone being indicated; and it is intended that the student should fill in all the details as he proceeds step by step with his dissection. Directions are given him how to proceed in the work, and the number of plates is large enough to include all the stages he passes through. There can be no doubt that a sketch, however rough, is of most valuable assistance to the learner, and enables him to fix in his memory the facts he has observed with far greater readiness and with much increased chance of their retention than any amount of tabulated forms so much in vogue as aids to memory. Mr. Hensman has hit upon the only sound method of conveying *memoria technica*, but it will require the exercise of considerable patience on the part of the dissector to fully carry out the plan he has before him. Still the advantage gained by dwelling over his work and thoroughly searching out its details, in order to record them himself in the form of a sketch, however diagrammatic, is so obvious that few will be found to demur to it. As to the execution of these "outlines" themselves, they bear evidence of considerable painstaking and accuracy.

Memoranda on Poisons. By the late T. H. TANNER, M.D. Fourth Edition. London: Henry Renshaw. 1878.—The appearance of a fourth edition of this little pocket-book need only be signalised. Its character is well known, and its usefulness fully appreciated, by those for whom it is intended. The editor has carefully revised the text, and added much new matter. Interesting as illustrative cases are, it may be doubted whether it was originally intended to introduce them into the text to as great a length as appears here in the account of the "Balham Mystery," to which ten pages are devoted. The editor should take care not to exceed the limits of a small compendium such as this, but should leave to larger treatises the task of incorporating detailed accounts of *les causes célèbres*.

Studies in Pathological Anatomy. By FRANCIS DELAFIELD, M.D. Nos. 1 to 4. New York: W. Wood and Co. 1878.—In this serial work the author intends to travel through a wide range of pathological histology, and if subsequent numbers are as well produced as those before us, he promises to succeed in his rather ambitious task. The work consists of a series of large microscopical drawings by the author from his own preparations, accompanied by an explanatory text. The subject at present dealt with is inflammation of the connective tissues, especially of the serous membranes, the normal structures being first treated, and then the effects of inflammation, as produced artificially or as the result of disease. The text seems to be hardly equal to the drawings, the author erring somewhat on the side of brevity in his remarks upon the changes illustrated.

LUNACY, CELIBACY, AND MARRIAGE.

THE Thirty-second Annual Report of the Commissioners in Lunacy, recently issued, contains some facts relating to the civil condition of 14,154 patients admitted to the various lunatic asylums of England and Wales during 1876, which afford a fairly trustworthy basis for estimating the relative liability of the married and single of both sexes to the pains and penalties of lunacy. It would have been infinitely more satisfactory if the facts in question had related to the entire population of the asylums, but there is little reason to believe that the proportions of married and of single in this population would differ materially from those of the year's admissions dealt with. The age proportion of the whole asylum inmates would, however, probably differ considerably from that of the patients admitted in 1876, which detracts from the value of the figures as a test of the liability to lunacy at different ages. It is further to be regretted that the several facts for 1876 have been compared with the enumerated population in 1871, without correction for increase of population, which might so easily have been applied. Although this omission is unscientific, and to a certain extent invalidates the accuracy of each of the calculated ratios, the inaccuracy is of a constant character, and does not destroy their comparative value. As a means for judging of the relative liability to lunacy among married and single the calculated results in the report are singularly misleading. It is shown that the proportion of lunatics admitted to asylums in 1876 was equal to 4·4 per 10,000 among the single, 8·0 among the married, and 12·2 among the widowed. It is indeed, explained in a note, that the proportion of admitted unmarried lunatics has been calculated upon the single population at all ages, whereas three-fourths of the single population are children under twenty years of age; this renders the comparison with the married and widowed ratios worse than useless. By the simple expedient of excluding from calculation the facts relating to population and lunacy, under twenty years of age, we have obtained other ratios which are fairly comparable and trustworthy, and exactly opposite to those given by the Lunacy Commissioners. It appears that whereas among the unmarried (without distinction of sex), aged more than twenty years, the proportion of lunatics admitted to asylums in 1876 was equal to 15·8 per 10,000, it did not exceed 8·1 among the married of the same ages; among the widowed the proportion was 12·2 for 10,000. Assuming that the admissions for a single year afford a satisfactory basis for calculation, the proportion of unmarried persons attacked with lunacy is very nearly double that which prevails among the married, and is as 195 to 100. The comparison of similar ratios, calculated for the two sexes separately, may be said to give identical results. We have seen that the excess in the proportion of lunacy admissions in 1876 among the single, compared with the married, of both sexes, was equal to 95 per cent.; this excess was equal to 95 per cent. among

males, and 96 per cent. among females. It may be noted that the relative proportions of male admissions showed an excess upon those of females among the single, married, and widowed, equal to 7, 8, and 9 per cent. respectively. With regard to the relative liability of the sexes to lunacy in the married and unmarried conditions, at different ages, many interesting conclusions might be drawn from these calculations; on the present occasion, however, we must content ourselves with the few following generalisations. The relative immunity from lunacy enjoyed by the married compared with the unmarried portion of the population of both sexes increases up to fifty years of age, after which it declines, although the difference continues marked at each succeeding decennial of life, while it is greatest between forty and fifty, the age at which there is the strongest tendency to lunacy. Among males the excess of liability to lunacy among the single, compared with the married, is proportionally greatest between twenty and thirty years of age, and declines rapidly after fifty years of age. Among females, however, on the other hand, the proportional excess among the unmarried is smallest between twenty and thirty (when puerperal causes affect the rates of lunacy among the married), while it does not, as among males, show so marked a decline after fifty years of age. Among the single, the lunacy rate is higher among males than among females between twenty and fifty years of age; whereas after fifty the rate is higher among females than among males. Among the married, the liability to lunacy is considerably higher among women than among men between twenty and thirty, owing to puerperal causes; whereas, at each succeeding decennial, men show a greater liability than women. After fifty years of age, the evil effects of celibacy, as apparently increasing the tendency to lunacy, is far more marked among women than men, although at all ages over twenty years the relative excess of lunacy attending celibacy is almost identical in the two sexes.

ABSTRACT OF THREE LECTURES

ON THE POSITIVE IN REMEDIAL ART.

Delivered before the Faculty of Physicians and Surgeons of Glasgow in the Session 1878.

BY B. W. RICHARDSON, M.D., LL.D., F.R.S.

(Continued from p. 297.)

IN the lecture I am about to deliver, the subjects to which I shall venture to direct your attention will relate to the elementary action of medicinal substances: I mean to the part which each element plays in determining action.

This, as far as I know, is a new method of research as a systematic mode of arriving at the action of complex organic compounds. I first gave a specimen of it in my report on the action of organic chemical compounds at the meeting of the British Association for the Advancement of Science held at Birmingham in the year 1866; and I have since continued to forward it by general as well as by experimental observation. The idea is, that if we could correctly learn the specific action on every living animal structure and on animal function of each one of the elements which, by their combination, make up our medicinal substances, we should easily learn what element in any substance was playing the most important part. Passing then to the study of the action of binary compounds of the elements, we should next be able to detect what are the variations of action produced by such combination; and so, step by step, we might pass to learn the *modus* of the most complex of the organic medicinal substances. For example:—Suppose we knew the precise effect of hydrogen on the body, and the precise effect of nitrogen. What is the difference of action when these elements are united in combining proportions? They are so combined in ammonium. Which of the elements in that compound is the active agent in action? Is the difference of action that may be observed entirely new, as though the compound played a part perfectly distinctive, and as if it were itself an element?

That we may consider this outline of the subject a little more closely, let me presume to state a fact which I am sure you all know, but which you will, I am equally sure, forgive me for recalling to your attention,—that in the medicines we are ordinarily accustomed to prescribe there are included twenty-four of the bodies of the elementary series. These elements are—

Oxygen, Hydrogen, Chlorine, Nitrogen	Gases when in a free state.
Mercury, Potassium, Sodium, Magnesium, Calcium, Copper, Zinc, Lithium, Silver, Iron, Lead, Arsenic, Antimony, Bismuth	Metals.
Iodine, Bromine, Phosphorus, Sulphur, Carbon, Boron	Non-metallics.

In this enumeration I have omitted some of the elements which have been used on very rare occasions—viz., gold, cadmium, cæsium, barium, and thallium. I am not sufficiently acquainted with the action of these elements to be able to introduce them with the better known elements that have been named above.

In enumerating the elements used in medicine I have placed them as they are usually placed in the books, as gases, metals, and non-metallic elements. When, however, we come to consider them from a therapeutic point of view, they may be classified differently. They may be grouped according to their specific action in some such order as the following:

	1.—*Oxygen.*	
Chlorine.	Iodine.	Bromine.
	Mercury.	
	2.—*Hydrogen.*	
Potassium.	Sodium.	Calcium.
Zinc.	Lead.	Copper.
Magnesium.	Silver.	Lithium.
	3.—*Nitrogen.*	
Phosphorus.	Arsenic.	Antimony.
Sulphur.	Bismuth.	Boron (?)
	4.—*Iron.*	
	5.—*Carbon.*	

The classification here supplied must be considered as tentative only. It is a good classification to work on, but it may, in course of time, admit of change. The position of sulphur I am not quite certain of; boron might perhaps be expunged altogether. The rest stand fairly as presenting analogies of action, if not identities. Iron and carbon stand alone. The groups, for convenience, may be named from the first on each list, as the oxygen, the hydrogen, the nitrogen, the iron, and the carbon group.[1]

It may be best now to consider some points in connexion with the special action of the members of these different groups, commencing with oxygen.

OXYGEN.

Immediately upon the discovery of oxygen gas by the illustrious Priestly, it became matter of belief that in the gas would be found an agent of the most startling therapeutical value. The application to it of the term "vital air" is a sufficient sign of the expectation that followed upon the discovery. It was assumed not only that animals would live longer in oxygen gas than in common air, in which oxygen is diluted in the proportion of twenty-one parts in

[1] Broadbent, with great acumen, has specified the analogies of the nitrogen group,—Group 3 in my classification.

the hundred, but that a greater activity of life would follow upon the introduction of the gas in its pure state into the living body.

To the wonder of the first observers, these anticipations were not realised; Nature, in fact, was wiser than man, and approved that the dilution she had selected in common air was the correct amount, and that more was as injurious as less. In time, and in the course of experimental research, so marked became the change of opinion, that pure "vital air" was pronounced to be a narcotic poison—nay, even a fatal poison if exhibited for too long a time.

As is usual in cases where from direct experiment there arises so wide a difference of opinion, there is in both series of observations a certain degree of truth. I have found that oxygen may prolong animal life and may shorten it, the difference of result depending not on the gas, but on the conditions under which it is administered.

Briefly, the action of oxygen on the animal economy is as follows:—Carefully prepared and well washed of all impurity, the gas may be inhaled at 55° F. in the pure state without a consciousness of the difference between it and common air. A warm-blooded animal living in a chamber charged with oxygen appears for a long time—often for several hours—to live in perfect health.

In time, and this although the products of the combustion of the animal be carefully removed, there is gradual decline in the temperature of the animal, followed by a tendency to sleep. At last the sleep becomes more determinate, and death occurs in deep sleep. At a lower temperature than that just named the narcotism produced by the inhalation of oxygen is very much quickened, so much so that the gas, if it could be conveniently applied in this way, might be used as a sedative or narcotic. At a temperature of 32° in a chamber of oxygen I have seen deep coma induced in mice, in pigeons, and in guinea-pigs, within thirty-five minutes of the commencement of the inhalation, death from coma occurring within the hour.

The results are, however, altogether different in character if the conditions of inhalation be modified. In a raised temperature—a temperature of 75°—the inhalation of oxygen may be sustained without coma, and, indeed, without injury, for long intervals of time. I constructed, in order to try this question, a small room that could be steadily changed and ventilated with pure oxygen gas. In this room I kept full-sized, warm-blooded animals, in one instance for three weeks, without being able to observe any variation from the natural life that could be considered detrimental. The only peculiarity they showed was voracity of appetite, and, in spite of the most exuberant supply of food, a moderate loss of weight of body. At all times during this process the blood was of the same colour in the veins as in the arteries—viz., of rich, bright, arterial crimson.

This power of pure oxygen to sustain life would support the view that, under favourable conditions of temperature, the gas is inert. The suspicion is not correct. It is a most curious fact, and one I have confirmed by many experiments, that, in order to retain the capability of the gas to support life for a long time, it must be always freshly made. Washed, however carefully, of impurity, rendered by purification a perfect oxygen, as perfect to all physical determinations as when it was first evolved, it nevertheless loses its power to maintain healthy life if it be passed a few times through the chamber in which the animals have breathed it, unless the temperature be raised, or it be subjected to the effect of the electrical discharge.

In the most singular manner heat and electricity alike modify oxygen as a supporter of animal life. In 1860 I placed three full-grown mice in a jar containing 100 cubic inches of pure oxygen gas. One of these animals was placed now in a temperature of 45° F.; another was placed in a temperature of 75°; the third was placed in the same temperature as the first—viz., 45°, but with this difference: that into the jar containing the animal there was introduced, through the stopper, a pointed copper wire, connected with the positive conductor of a frictional electrical machine. When the machine was set in motion, a brush was produced at the point of the copper wire. Every five minutes this electric brush was excited within the jar. I knew, from previous experiment, that the animal placed simply in the colder atmosphere would fall asleep, and sleep to death in the matter of from one to two hours, and this was fulfilled. I knew that the animal in the warmer atmosphere would continue to live for many hours, until it became affected with the products of its own combustion, and that was fulfilled; but I was not prepared for the result in the third case—namely, that the animal, falling into a narcotised condition, would nevertheless continue to live in sleep so long as the electrical excitation was sustained. It lived under these conditions seventeen hours in gentle sleep; on being set free, it showed no sign of injury, and lived on as before the experiment.

For supporting life oxygen takes, then, a given activity both from heat and electricity. By reduction of either force it may be rendered negative, by addition it may be rendered active. The fact recalls to the mind the discarded Stahlian theory of phlogiston. Priestley's dephlogisticated air may be, as it were, recharged, upon which it assumes new, and, in respect to life, more potent sustaining qualities.

We must follow this point yet a step further. Oxygen may not only be charged but surcharged, both by heat and by electricity, so that it may become a fatal agent. In an atmosphere of pure oxygen so soon as the temperature passes 90° of Fahrenheit there is danger, not now from sleep, but from changes occurring in the blood and in the muscular fibre. There is separation in the blood of the fibrine, the fluid colloid solidifies; the myoscine of muscle solidifies, and there is death, followed almost instantaneously with intense cadaveric rigidity. These phenomena are, it should be observed, much more rapidly developed in carnivorous than in herbivorous animals.

An atmosphere of pure oxygen charged with electricity, by being passed through the ozone-producer, may be made a fatal atmosphere, fatal in a degree immediately under the control of the experimentalist.

In a temperature of 70° F. oxygen may be rendered by the electric spark so condensed as to be absolutely irrespirable. Reduced so as to become respirable the inhalation of it causes pain in the head and a singular soreness of throat, with oppression of breathing and dryness of the mucous surface. If in the lower animal the inhalation be continued so as to produce distinct effects, the symptoms induced are rapid breathing, free secretion from the mucous passages of the lungs, intense action of the circulation, and sometimes sudden dissolution from excessive cardiac action. In experiments with ozonized, as with heated oxygen, the effects are much more marked on carnivorous than on herbivorous animals.

It is also worthy of notice that the effects both of heat and electricity on oxygen are reduced in the most signal manner by the presence of water-vapour in the atmosphere. With pigeons the simple process of saturating the gas with water is sufficient to neutralise eleven degrees of heat;—i. e., an atmosphere of dry oxygen warmed to 107° F. will prove fatal to the animal with rapidity; while an atmosphere of oxygen saturated with water-vapour may be raised to 118° F. before it will cause danger. The same truth holds good, in a relative degree, in respect to oxygen in the electrical condition. Both truths have most important bearings on the subject of climatic influence and atmospherical disturbances; but I must not be tempted into this field of observation at the present moment.

The effects of oxygen, when it is inhaled by the living body, are thus varied by conditions in the most marked degree. Oxygen may simply support life; it may depress vital action; it may exalt the vital processes, and all according to the state in which it is presented to the blood. It is observable at the same time that it never acts so as to produce what may be called violent symptoms; it never produces convulsive action nor sign of suffering of pain.

(To be continued.)

UNIVERSITY OF CAMBRIDGE.—The examination for certificates in sanitary science will begin on Tuesday, Oct. 1st, and will be open to any person, being twenty-four years of age, whose name is on the Medical Register of the United Kingdom. Candidates must send in their applications on or before September 18th to Professor Liveing, Cambridge.

DONATIONS ETC. TO MEDICAL CHARITIES.—The Misses Brooke have given a second donation of £100 to the City of Dublin Hospital. The Adelaide Hospital, Dublin, has received £300 under the will of the late Miss Pringle, and £100 from the late Miss Stamer, also a donation (second) of £100 from the Misses Brooke. The Leicester Infirmary has received £348 19*s.* 11*d.* under the will of Mr. Alcock, of Hugglescote Grange. The Rev. E. R. Benyon has given £100 to the Suffolk General Hospital. "H. F. J." has given £200 to the Hospital for Sick Children, Great Ormond-street.

THE LANCET.

LONDON: SATURDAY, SEPTEMBER 7, 1878.

THE recent discussion in *The Times* and other daily newspapers, respecting the physician's and surgeon's fee, has given shape to an old and growing grievance between the profession and the public. The season is scarcely opportune for its consideration, but it cannot on that account be let pass by. For some years both doctors and patients have felt increasing dissatisfaction at the customary rate of remuneration, but in different ways; the former believing that they are, as a rule, badly, and at best inadequately, paid for their time and skill; the latter begrudging the ordinary fee of one guinea, and not unfrequently reducing it to the meaner proportion of a single sovereign. Quietly, but obstinately, the struggle has been carried on, and might have been ultimately settled in private had not a few consultants, more daring than their fellows, exhausted the tolerance of their patrons by asking for a higher acknowledgment of their services, and demanding a double fee for first consultations. The contest has attained large dimensions, and has at length been transferred from the seclusion of the consulting-room to the openness of a public arena. Angry complaints have been made of the implied extortion of medical men, and, in the absence of better weapons, an attempt has been made to justify the charge by calling the change an unnecessary innovation of recent times. Granting that the adoption of a particular custom by a past or passing generation may be a good reason why it should never be altered, it is allowable to ask whether the conditions of the life of medical men in the present day are precisely the same as those of the practitioners belonging to the preceding generation. A glance will show they are not. To say nothing of the longer, later, more elaborate, and more costly medical education of recent times, it should scarcely be necessary to remind the discontented that the increased cost of living by 20 to 50 per cent. during the past twenty years, calls for a revision of consultants' fees. Provisions are dearer, money is cheaper, and wages for all classes, except doctors, are higher now than they were then. Though riches have increased, wealth accumulated, and money become more widely disseminated, the honorarium of the physician and surgeon remains nominally now exactly the same as it was a century ago, while its real value has considerably diminished. Such an explanation may appear meaningless to one at least of those who feel aggrieved, or serve only to elicit the retort that doctors in Queen ANNE'S time were vastly overpaid. This is clearly a matter of opinion. But the complainant referred to takes special pains that his sagacity shall not be ashamed of his wit, and solemnly avows that if doctors persist in maintaining the increased charge, he will, for spite, preserve good health, or if perchance he should fall a victim to any of the "ills that flesh is heir to," he will confide his precious body to the gratuitous operations of Dame Nature, regardless of the consequences. For such as he colic may carry conviction when words would fail.

An old tradition seems to possess the popular mind that the struggling and hardworked doctor should look for his guerdon elsewhere than here. Doubtless he does, but in the meantime he must live. When SOCRATES—vain old man that he was, with all his pretended humility—rejected the presents of his disciples, much to the annoyance of the worldly-minded XANTHIPPE, he comforted himself with the assurance that he had a reward that his fellows knew not of; and when reproached by ANTIPHON on the shabbiness of his dress, the wretchedness of his dwelling, and the coarseness of his food, replied that it was a prerogative of the gods to require nothing, and that he who wanted least came nearest to divine perfection. This doctrine, beautiful in the abstract, has practical disadvantages, and has found little acceptance either in ancient or modern times. Howsoever well adapted to the ideal existence of philosophers and dreamy metaphysicians, it is as little suited to the material requirements of medical men as to those of any city magnate of the present day. The time may come when actual or reputed saints will again condescend, as in the Middle Ages, to assist physicians and surgeons to tend the sick and perform miraculous cures on little food and no pay; but, as at present constituted, medical men are not of empyrean substance, which cannot fail, nor have they feasted on ambrosial food. Not gods, but men—they must eat and drink and sleep like other mortals.

Seriously, the time is ripe for the consideration of the question of professional remuneration. The exigencies of modern life and the amenities of society have conspired to make professional education and practice both laborious and costly—more laborious and more costly the higher the grade. Even when education is completed, and qualifications for practice are obtained, the medical man who aspires to eminence in his profession must not only continue, but even enlarge the range and scope of his studies, and give many of his best years to gratuitous service in the hospitals, before he gets even a glimpse of the goal, which, alas! he is then often too faint to reach. This is not exaggeration or figure of speech. Let those who doubt it ask how many physicians and surgeons, starting on the higher walks of professional life, full of confidence and strength and hope, fall by the way, worn out by harassing, unproductive toil, despairing of success. How many fall victims to loathsome or mortal disease contracted in the discharge of duty. How many, too, having consumed their energies and sapped their vitality in the tremendous effort, find when they do reach the prize their hands have become too feeble to hold it. Of the uncomplaining, self-denying sacrifices of comfort, health, and even of life, that hundreds of medical men, from whose ranks the consultants spring, make for the alleviation of sickness and suffering within the walls of the great hospitals, the public know little and care less. Painful and repulsive sights are not less shocking because they are familiar, and only doctors see the misery, the distress, the suffering, and the poverty of hospital patients in all their sorrowful sadness and horror. Compare the ghastliness of an operating theatre or the loathsomeness of an out-patient room with the tidiness and comfort of a well-kept ward, and say if, after years of such

service, a consulting physician and surgeon can possibly be overpaid. Often no pay comes at all.

Hospital physicians and surgeons have, however, another claim, less noble, perhaps, but equally cogent, which may have weight with the mercenary spirits of this practical but prosaic age. The most selfish person will scarcely maintain that the care of the poor, and especially of the sick-poor, should fall almost exclusively on one limited section of the community. But, in spite of the boasted benevolence of the wealthier classes of this country, there is no class on whom the burden falls so heavily as on the medical profession. This may be partly the result of ignorance, but it is not wholly so. Nine-tenths of the outside public have a notion that hospital appointments are directly and largely remunerative to the visiting medical officers, and many a wealthy upstart, who ostentatiously subscribes five pounds a year to the funds of a hospital, fancies he thereby buys the right to "threaten and command" the honorary medical officers, each of whose yearly donation, in time and brains, is, at a moderate computation, equivalent to a money value of from one to five hundred pounds. This aspect of the medical charity question the public, and especially its representatives—the lay committees of hospitals,—find it convenient to forget or ignore.

Receiving no pay for hospital work, and restricted in practice, where must the consulting physician and surgeon look for a livelihood? The *mens conscia recti* will encourage him in his weary charitable labours, and console him in his disappointments; but it will not buy him a house, clothe him, feed him, educate and support those who are committed to his care, much less supply him with a few necessary comforts in declining health or in premature old age made painful and unlovely by the ravages of responsibility, worry, and anxiety of the public service. If the public do not discharge their full share of charitable obligations, they cannot be surprised if they are made to pay in some other way. So long have they closed their eyes to patent facts that they now resist a moral claim as an iniquitous imposition.

The remedy is in our own hands. The members of the profession have now an opportunity of speaking out and making their position known. They must fix their own value, and stand by it. Failing collective action, it is incumbent upon the leaders of the profession to set the example, and add worth and dignity to their calling by appraising their services more highly. Instead of two guineas being excessive for a first consultation, it is not adequate in many instances to the trouble and anxiety of even later consultations. There are physicians and surgeons in London who ought to receive not less than five guineas for each consultation. It is idle to urge that it cannot be done; it is done elsewhere, and may be done here. In America the heads of the profession are not willing to be set down at a guinea, and there is no reasonable cause why Englishmen should put their value below that of their brethren on the other side of the Atlantic.

WHATEVER may be thought of the cause or responsibility of drunkenness, the condition of intoxication should be clearly recognised as one of disease. Poison is present in the blood and circulating through the vessels. The stress of its baneful influence may, at any moment, fall with fatal effect on a particular centre of nervous force, and the subject of the morbid state be *dying* as well as *drunk*. For the time being, while the intoxication lasts, the sufferer, though probably the victim of his own depraved appetite, is as much afflicted with disease, and an object of commiseration with whom it is only just and humane to deal tenderly, as if he had been poisoned with a deleterious substance introduced into his system accidentally, or by some other person maliciously. It is nothing to the question of the moment how the poison got into his system; the urgent need is that it should be eliminated; and the circumstance that in a majority of instances the morbific matter is thrown off without doing immediately perceptible injury does not in the least degree diminish the importance of right views as to the nature and treatment of drunkenness, and the remembrance that intoxication is a disease.

The too familiar heading of newspaper paragraphs, "Drunk or dying," again calls attention to the subject of mistakes contributing, if not directly tending, to the death of the victims of misconception—an evil of inexplicably frequent occurrence generally implicating some well-meaning but necessarily incompetent officer of police. No useful purpose is, so far as we can perceive, fulfilled by the parade of this sensational title. On the contrary, it perpetuates the grievance which it aims to remedy, by pointing to some defect in the provisions made for distinguishing between the state of drunkenness and the condition dying. The fault is much worse than a deficiency of power to discriminate in special cases. It is a radical error, from which nothing but constant peril can arise. It is not a question of making a differential diagnosis between two states. The difference it is required to recognise is one of degree, not of nature. If there were no such close relations between the intoxication produced by drink and death as actually exist, we must still maintain that the discovery of the true condition should not be left to the police; but, looking to the real facts of the case, and remembering that the blood-poisoning of alcohol may at any moment produce death, and that any one of a score of contingencies—such as the pre-existence of disease, an injury inflicted, or an accident sustained immediately before or after the intoxication—may place the subject of alcoholic blood-poisoning in imminent danger, it is incumbent to enforce the claim we have repeatedly made to a revision of the whole subject, at a time when long-needed changes are being made in the police organisation of the metropolis—changes that will, doubtless, be carried out also in the provinces, and lead to still greater beneficial reforms.

We have contended, and still contend, that every drunken person found by the police, not under proper care, should be at once removed, with all suitable precautions against injury, to the nearest police-station; and that when there, instead of being consigned to an ordinary cell to sleep off the effects of the intoxicant, or roughly drenched with cold water to restore sensibility, the patient should be placed in an apartment set apart for the reception of such cases, and immediately seen by the police surgeon or the nearest medical practitioner, every care being taken to ascertain the true nature and cause of the condition in which the person had been found, and to discover the existence of any commplication, whether of injury or disease. We say this should be

done in *all* instances without exception, the most obviously "drunk" as well as the possibly "dying." In cases of simple drunkenness a full charge for the medical and general attendance bestowed should be added to the amount of the fine imposed. Drunkards who could pay the fine would be punished for their offence against decency and self-control by being made to pay for treatment as invalids during the time of their unconsciousness; while, in the case of the poorer miscreants, the costs could be defrayed out of a fund, to be assessed upon the publicans and beershop-keepers in the district. The tax might be resented, but it would act as a wholesome incentive to caution in the supply of drink to persons who have already had "more than is good for them," a fact which the licensed victualler and his servants can recognise fully as well as the police can distinguish between the drunk and the dying. It seldom happens that the victim of intoxication calling for the interference of the passing constable has wandered far from the last "place of refreshment" at which he has obtained a dram; so that, practically, the publicans of a "police district" would be individually or collectively responsible for the condition in which the drunkard was found, and could have no cause of complaint at being compelled to bear the charge of his treatment.

The plan suggested—which has been repeatedly indicated in these columns—involves no great outlay or trouble. It simply requires that at each police station there should be an apartment provided for the reception of cases of sickness or injury of any kind, and that it be made a rule to treat *every* unconscious person, regardless of the cause of the state, as the subject of sickness, and to send at once for medical aid. When the case proved to be one of disease or injury, if removal would be safe, it could be transferred, under the superintendence of the surgeon, to a hospital, or, if deemed expedient, to the residence of the sufferer. The friends of a person suddenly afflicted with disease, or injured by accident or maliciously, would be well content to defray the cost of humane and prompt treatment; or, if any demur arose, the charge could be recoverable as a fine before a magistrate. The first aim must be to convince public opinion that the arrangement proposed is a reasonable and proper one. This accomplished, there will be no difficulty in carrying it into effect. We cannot but think that a very little consideration must suffice to demonstrate both the need and wisdom of the scheme recommended. Meanwhile it is idle to blame the police for not more efficiently discharging the medical function of diagnosis, which they are in no way qualified to perform, and for which it is unreasonable to hold them responsible.

THE *United Service Gazette* states that it has reason to believe that the forthcoming Warrant for the Department "will provide for the appointment of surgeons to regiments for the term of five years. Medical officers will thus be made 'regimental' once more, and one of the chief objections to the 'unification' system will disappear." In this case we believe the wish is father to the thought, and that our contemporary knows as much as his neighbours on the subject—and no more. Whatever may be the merits, or demerits, of the War Office Committee, they certainly have great powers of reticence, and have as yet given no intimation of the recommendations they have submitted to the Secretary of State. But a careful consideration of the history of the Department, and of the general changes which have been made in the organisation of the army, leads us to the conclusion that the reintroduction of the regimental system into the Department is as likely as the restoration of the system of purchase into the army.

If we were to hazard an opinion as to the changes likely to be introduced, we should say that they will probably include the abolition of the intrant examination of candidates, an increase of pay for the executive officers, the abolition of the limited service system, the right of leaving the service with a gratuity after ten years' service, thus retaining the advantage of the limited system without the drawback attaching to the dismissal of nine-tenths of the officers, and a distinct understanding of the principles on, and the extent to, which exchanges will be permitted. These will probably be the leading points, and, if carried out in a liberal spirit, will tend greatly to popularise the service. The unification system has not yet had fair play. The want of medical officers has prevented it being worked as it ought to be, rendering necessary more frequent change of station than is desirable, and the open hostility of the Horse Guards has done much to deprive it of a fair chance. This ought not to be so. The system adopted by the Secretary of State ought to have the support of all the departments of the Army, and nothing will be more likely to damage the *prestige* of the Horse Guards and to give rise to important changes in its own organisation than a continued opposition to the efficient working of a department which has been reorganised, after long and careful consideration, merely because it does not happen to coincide with the views of the Field Marshal commanding.

UPON what depend the variations in size of the cells of the central nervous system? An attempt at an answer to this question has been lately given to the Académie des Sciences by M. PIERRET, Professor at Lyons, who suggests that the size of the cell is in simple relation to the length of the fibre connected with it. Of the motor nervous system the largest nerve-cells are situated in the lumbar region of the spinal cord, and in the fronto-parietal convolutions. These two points are related one to the other, and the distance which separates them is very considerable. Moreover, the longest nerves of the body—the sciatic—arise from that point in the lumbar region in which are the largest motor cells. In the dorsal region the motor cells are far smaller. The distance from the brain is less, and the course of the nerves which spring from them is relatively short. In the cervical region the cells are larger than in the dorsal region, but smaller than those of the lumbar, which may be explained by the fact that they are not far from the brain; but the course of the nerves arising from them is of considerable length. So also with the hypoglossal nerve, the cells of which are only a little smaller than those of the cervical enlargement. For a similar reason the cells of the higher motor centres lessen in size in proportion as their distance from the cerebral hemispheres becomes less. Hence the sixth nerve is connected with larger cells than the third and fourth. Lastly, in the corpora striata, the cells are still smaller, and may be distinguished in form from those of the

optic thalami or corpora geniculata or corpora quadrigemina.

In the sensory system, the largest cells are found in the posterior vesicular column, in the neighbourhood of the lumbar enlargement. These cells probably receive the centripetal fibres from the lower limb, and they are removed for a considerable distance from the occipital lobes. The cells of the ganglia of the restiform body which receive the sensory fibres of the brachial nerves, and the nucleus of the sensory part of the fifth nerve, both have much smaller cells than those of the lumbar posterior vesicular columns, and they are much nearer the cerebral cortex. The cells of origin of the optic nerve are smaller than those of the fifth, and larger than those of the olfactory. The shortest nerve is that which is connected with the smallest cells—the auditory. Hence M. PIERRET infers that the law which governs the increase or decrease in size of the cells is the same for both the sensory and motor cells, and may be formulated thus—that the size of the motor and sensory cells of the nerve-centres of man is directly proportioned to the distance which separates them from the peripheral organ which they innervate, and from the cerebral centre. This law is true for the cells of the cerebral cortex, for the largest cells are met with in the fronto-parietal regions related to the lower limbs, and in certain of the occipital convolutions cells are met with almost as large.

The theory is one of considerable interest, and there may be "something in it," but we doubt whether the accordance between the two elements, length of fibre and size of cell, is so close as to justify the formulation of so precise a law upon the subject. Moreover, we know too little of the precise anatomical relations of the parts of the nervous system to permit us to generalise from the length of the fibres which probably commence and end within it. For instance, it is not at all proved that the fibres of the posterior nerve roots are connected with the cells of the posterior vesicular columns. The variety in size of the cells in the same group is also difficult to explain upon the theory of M. PIERRET. The theory probably approaches as near an explanation as is possible in the present state of our knowledge, but it is doubtful whether that knowledge is yet sufficiently accurate to permit useful generalisation.

As time goes on, and we acquire fresh knowledge as to our new possession in the Mediterranean, we are at last beginning to estimate the climatic and sanitary peculiarities of the island. It has a population of about 180,000 persons, and the universal concensus of testimony is that they are as a rule singularly healthy. Mr. R. HAMILTON LANG, who has been quoted on the subject, says moreover that a large proportion of those who go to Cyprus enjoy as good health as they can hope for in any country. There is, of course, here, as at many other places, some risk of catching ague at certain seasons of the year. But there are high plateaux on the island as well as malarious plains, and many of the former are still so well wooded with pine and fir that they may very fitly form sites for sanatoria. Of course, as the thermometer very often stands at 90° in the shade, it is foolish to carry there and practise English manners and customs of living. The experience of Mr. LANG goes to prove that the country is, at all events, much healthier for an average European than India or China. His own stay there was prolonged to nine years, during which time he had excellent health. In this period he saw come and go three French, three Italian, three British, and two American Consuls, the only casualties among them being one from cholera, and one during absence on leave from the island. Mr. LANG moreover says: "Of the pernicious fevers which destroy many lives, reported by Dr. CLARKE—who spent ten days on the island—I can only say that I never heard of them during my residence (i. e., ten years), although they may have existed before my arrival." It is plain, however, that there are many parts of the island sufficiently high to serve as a climatic antidote to malarious fevers. Hills exist with an altitude of from 3000 to 5000 feet, and Nicosia is the centre of an elevated plain that stretches in either direction for upwards of thirty miles. We are informed by FRANZ VON LOHE, who has written a very interesting book on the island, that though the heat is very great, there are most refreshing breezes and night dews. The rainfall is always small, commencing in October, and continuing till the end of January. But here a rainfall of thirteen inches is quite enough to produce a very fair average crop of grain. In all authoritative works that we have had the opportunity of consulting, the prevalence of some form of ague is almost invariably spoken of, as well as the great heat, and the pernicious effects of alcohol. But, as we have indicated above, these evils exist in many other places, and two at all events of these are remediable. We have pretty well driven ague out of our own fenlands by what is sometimes called over-draining; and, as regards alcohol, a man can certainly be a law unto himself.

We may remark parenthetically that the island is no place for an excursionist, pure and simple, and that Mr. COOK has acted wisely in declining to be responsible for the safe conduct of any trip to Cyprus this year. Pleasure seekers are not wanted just now, and there is no special material for their delectation.

One paramount mischief has been propagated here, as at the Cape and many other semi-civilised countries. Splendid trees have been ruthlessly and wastefully destroyed, but none have been planted in their stead, so that a wood famine appears almost imminent—at least, a famine of the kinds of timber most useful to civilised mankind. But the soil is luxuriantly fertile, and water can be obtained for irrigation by the establishment of artesian wells, which should be at once bored, for general as well as agricultural purposes. Melons, potatoes, and pumpkins grow in great profusion, the cattle and sheep, though small, produce excellent meat.

Much more has yet to be written in detail as to the climate and general resources of the island. But enough has been recorded to show that Cyprus is in very many respects precisely similar to several colonies that we have from time to time annexed, and is by no means so unhealthy as some of them. It has the sort of fever that sometimes kills on the West Coast, in China, and in the West Indies, but the type is more manageable, and in process of time may be driven away altogether, because the tract of country required to be operated upon is, comparatively speaking, very limited in area. Cyprus has unfortunately the intense heat of Africa and some parts of India, but, in consequence of its insular position, cool nights are probably the rule

rather than the exception. Dysentery, yellow fever, cholera, ophthalmia, and other maladies are not endemic, and it will be our own fault if they at any time become epidemic. In fact, like all other islands surrounded by well-peopled continents, Cyprus will in the future, if well administered, be more likely to suffer in a sanitary sense by foes from without than by any from within. It is, as we all know, a very little way off the main high-road to the East, and so it will be the duty of those charged with the prevention of disease and the maintenance of health to organise and perfect such a system of ship surveillance that shall eventuate in restricting the importation of disease, and, at the same time, put no material obstacles in the way of legitimate commerce.

Annotations.

"Ne quid nimis."

THE FATAL THAMES STEAMBOAT COLLISION.

IT may be remarked that this almost unparalleled catastrophe in the annals of excursionising has no medical, sanitary, or scientific aspects. But we desire to pause for an instant in order to discuss this question, because it is our wish to contribute a meed of sympathy to the sufferers who survive, and an expression of horror at some, and of disgust at other, episodes connected with the appalling tragedy of Tuesday last.

The *Princess Alice* is one of three saloon steamboats, all very well known to frequenters of the lower Thames reaches, and the largest of their kind in Great Britain. They are, in fact, in most respects very poor imitations of the magnificent boats that ply on the Hudson and other American rivers. But in point of strength, and anything capable of being called resistance, they are, so to speak, mere gingerbread, and the ordinary circumstances of a collision with any other class of vessel would result almost inevitably in a disastrous issue to the saloon-boat, and that, not only on account of its fragility, but because its angles of stability are badly adjusted, and, to use a popular phrase, it is liable to become, with a full animated cargo, top-heavy, and with a beam wind very dangerous. The steering qualities of these boats are, we believe, pretty good, but enough is indicated above to show that they can only be classed as fine-weather boats under favourable circumstances, and even under these circumstances require great care in handling. The late captain was reputed an able man, and, indeed, all those who command the vessels of the London Steamboat Company have served a life-long apprenticeship on the Thames. But there are elements of danger and difficulty in taking charge of a pleasure steamboat on the river that exist nowhere else, or, if at all, in an infinitesimal degree. The crowded state of the stream at all times, and specially at high and low water, the enormous number of helpless craft called dumb-barges, that seem to be made for nothing but to obstruct the water-way, and the peculiar proclivities of a London excursionist, are all elements of difficulty. And to these the Steamboat Company have elected to add so-called "moonlight trips." The *Princess Alice* was not, it is true, on a moonlight trip, but the sun had gone down, and the boat was nearly two hours from her last place of call. There are incidents of cheap excursionising below bridge, in the autumn months, which render the avoidance of accident exceedingly difficult. Indeed, the comparative safety of the vessels is due to the fact that they are carefully commanded, ably steered, and generally well managed, and the captains and pier-masters work together—a very important point. But, a fair amount of safety cannot, we are assured, be compassed unless it is insisted upon that no excursion steamboat of the kind shall, under any pretence whatever, ply on the Thames after sundown, that any person found in the boat drunk should be without fail set ashore at the next pier, and that no individual shall be allowed to embark with any symptoms of intoxication upon him. This is, as we all know, a rule not easy of application, but its superlative importance in nautical matters cannot be exaggerated. The "rule of the road," either at sea or in the Thames, is too complicated a business to discuss here, and its discussion would not be edifying. But it is well that the public, lay as well as professional, should be thoroughly alive to the fact that no saloon or other London Steamboat Company's vessel employed in the excursion traffic has the smallest chance of real, or even of comparative safety, if she is so unfortunate as to collide with a very ordinary or very ancient screw or paddle steamer, a score of which may be met with between London Bridge and the Nore. We cannot finish these general remarks upon this sad subject without commenting most emphatically upon what may be called the "riparian circumstances" of Wednesday, the day after the terrible accident. The ordinary steamboats from London to Woolwich and Gravesend are reported to have literally swarmed with passengers all day, a proportion of whom were more or less intoxicated. The majority of flags on the river and in the docks were hoisted half-mast high: for many of those who do good work on the river officially day by day were, unhappily, directly or indirectly, represented in the list of the drowned or the dead. But this excursionist element in Wednesday's proceedings, and its attendant peculiarities, is particularly revolting, and says little for the results of the much bepraised advance of education and enlightenment.

DIPHTHERIA FATALITY IN LARGE ENGLISH TOWNS.

DR. RUSSELL and Dr. Thursfield are agreed upon the greater general fatality of diphtheria in rural than in urban populations, and as this fact has an important bearing upon the disease, considered from a preventive-medicine point of view, the following corroborative facts are not without interest. The annual rate of mortality from diphtheria in England and Wales during the eight years 1870-77 averaged 12 per 100,000 of the population. In the aggregate population of twenty of the largest English towns, somewhat exceeding seven millions of persons, the death-rate from this disease averaged only 10, while in the rest of England and Wales it was equal to 13 per 100,000. In the twenty towns the rate from diphtheria ranged during the eight years between 9 and 12, and averaged 10 both in first and last half of the eight years. In the population of England and Wales, exclusive of the rather more than seven millions of persons living in the twenty large towns, the annual death-rate from diphtheria ranged during these eight years between 10 and 17 per 100,000, and the average annual rate increased from 11 in the first, to 15 in the second period of four years. It would appear that the fatality of diphtheria in the smaller towns and villages has shown a tendency to increase in recent years. The variation in the death-rate from diphtheria, however, in the twenty largest towns is sufficiently wide to call for special notice, as the period of observation, being eight years, appears sufficiently long to yield trustworthy average rates for comparative purposes. During the eight years 1870–77, the average annual rates of mortality from diphtheria in the 20 large English towns, per 100,000 persons living, ranged in order from the lowest, were as follow:—Nottingham, 4; Manchester and Hull, 7;

Leeds, Sheffield, Bristol, Newcastle-upon-Tyne, and Oldham, 8; Leicester, Salford, Bradford, and Norwich, 9; London, Liverpool, and Wolverhampton, 10; Portsmouth and Brighton, 12; Sunderland and Plymouth, 14; and the highest rate 19 in Birmingham. The ratio, therefore, in these 20 towns ranged from 4 in Nottingham to 19 in Birmingham. It would be useful to know why diphtheria during the past eight years should have been nearly five times as fatal in Birmingham as in Nottingham. Fatal cases of diphtheria occurred in Nottingham in six of the eight years, but the fatality did not spread. In Birmingham the death-rate from this disease during the eight years ranged between 14 and 28, and it is satisfactory to be able to note that while it averaged 23 in the four years 1870–73, it did not exceed 16 in the four following years, 1874–77. In the latter period of four years, however, the fatality of diphtheria in Birmingham still showed a marked excess, compared with the average rate in the other large towns. In rural districts diphtheria fatality occurs principally in villages, and small aggregations of an urban character.

THE PATHOLOGICAL ANATOMY OF THE LYMPHATIC GLANDS.

THE last part of the *Journal de l'Anatomie* contains an interesting note, by M. Cornil, of the results of his observations on the pathological anatomy of the lymphatic glands. The structure of these glands, thanks to the labours of Frey and many other observers, is sufficiently known, and it is only requisite to refer to the distinction between the proper follicular or medullary substance of the gland and the lymph-spaces or cavernous structure which surrounds them. It is in these spaces, which are continuous with the afferent and efferent vessels, that, according to M. Cornil, the first evidences of disease appear, and the morbid phenomena are usually consecutive upon lesion of some neighbouring tissue or organ. In acute forms of adenitis—such, for example, as occurs after a phlegmon—the afferent lymphatics contain pus, which by degrees fills the cavernous spaces, the adipose tissue around the gland becomes infiltrated with pus, and the cells of the adipose tissue become surrounded by lymph-corpuscles; and it is not difficult to trace the further changes that occur till an abscess is developed. The phenomena observed in syphilitic and strumous inflammation are, however, of a more interesting nature. M. Cornil first speaks of adenitis from syphilis, which he divides into two groups,—adenitis of the primary or secondary period, and adenitis of the tertiary period. In regard to the first, he finds, on microscopic examination of the glands, besides the ordinary lymph-corpuscles, large spheroidal cells containing several nuclei, the more voluminous of which contain two nucleoli. These large cells are much more numerous in the cavernous system than in the follicular tissue. He considers that they proceed rather from the flat cells which coat the reticulum, and are analogous to the so-called endothelial cells of the great omentum. Coincidently with the appearance of these there is a slight accentuation of the delicate connective-tissue fibres which radiate from the hilus of the gland to the periphery. Thus, at this stage, it may be said there is proliferation of the nuclei of the cells, and a slight degree of sclerosis.

In regard to adenitis of the tertiary period, M. Cornil calls special attention to a form where the swollen ganglia form soft whitish masses of medullary aspect. In these cases the changes observed affect almost exclusively the cavernous system and all the lymph passages contained in the ganglion. The fine reticulated or follicular tissue presents no noticeable alteration. The cavernous system becomes filled with round and granular lymph-corpuscles, and with the large cells containing many nuclei. It may be said, therefore, that at this stage there is a kind of catarrhal inflammation of the vessels, and of the intra-ganglionic lymphatic passages.

Professor Cornil then proceeds to discuss the conditions present in scrofulous adenitis. The glands are here characterised by a prodigious development of the connective tissue, and by the caseification, either partial or complete, of the whole gland, which takes place as a consequence of this change. Even at an early period of the disease bands of connective tissue may be seen proceeding from the tube, accompanied by some minute lymphatics and bloodvessels, and these, gradually increasing, divide the gland into islets. The islets assume a yellowish colour, and are then found to be composed of reticulated connective tissue, but the fibres are more thickened, soft, and granular than natural. The meshes are filled with large cells, containing granular protoplasm and a voluminous nucleus with two nucleoli. Surrounding the islets is a felt-like structure, which is also formed of reticular connective tissue, but the meshes are so elongated that the fibres collectively appear like fasciculi arranged concentrically to the islet. They contain lymph-corpuscles, with round or oval nuclei, which are smaller than those of the islet. In scrofulous adenitis, therefore, there is a true cirrhosis of the ganglion occurring at the expense of the perifollicular tissues of the cavernous tissue, of which no trace remains. This lesion leads ultimately to a fibrous transformation of the whole ganglionic mass, or, rather, to the caseification of the whole gland, which is the ordinary state.

INFANTILE DIARRHŒA AND HAND-FEEDING.

FATAL summer diarrhœa almost invariably causes a considerable proportion of excessive rates of infant mortality, and once a year the high rates of infant mortality in towns, due to diarrhœa, command a certain transient attention. The larger question, however, of infant mortality in general has not yet attracted that share of public attention which it deserves. What is principally wanted, in order to secure this end, is definite information on the subject, especially with regard to the feeding of infants and their insurance. We are inclined to think that we have not at present, with some exceptions, received from medical officers of health all the assistance in this matter that might fairly have been expected. Dr. James B. Russell, the medical officer of health for Glasgow, in a recent important paper "On the Comparative Prevalence of Filth Diseases in Town and Country," furnished some valuable facts relating to infant feeding and infant mortality in Glasgow, which encourage us to hope that English medical officers of health may endeavour to collect and to publish similar facts for some of our largest English towns. Dr. Russell tells us that his investigations extended over a period of six months, although he does not state the seasons they embraced. During these six months, an analysis of the deaths of all infants under one year of age showed that among the legitimate 63 per cent. had been suckled, whereas only 14 per cent. of the illegitimate had had this advantage. Still more important was the fact pointed out by Dr. Russell, that "of the *legitimate, but unsuckled* infants, no less than 69 per cent. died of diarrhœal and other diseases of nutrition, and of the *illegitimate* 68 per cent." On the other hand, of the legitimate *but suckled* infants only 45 per cent., and of the illegitimate *but suckled* infants 43 per cent., died of those diseases. It is now well known that the rate of mortality among illegitimate infants is almost invariably at least double the rate among those born in wedlock. The remarkable similarity in the mortality statistics of legitimate and illegitimate infants, given uniformity of feeding, appears fully to warrant Dr. Russell's assertion that "the want of maternal nourishment and of the greater general care and solicitude bestowed by a nursing mother upon a child really place both the legitimate and

the illegitimate infant upon the same platform, and that one which tends to death by diarrhœal and allied diseases." The increasing tendency in the upper and middle classes to attempt the rearing of infants upon artificial food is, we fear, not without its effect upon general infant mortality. Hand-feeding is, undoubtedly, the direct cause of much infant mortality among the working classes. More definite information as to the diet of infants in our various large towns could not fail to throw much valuable light upon the remarkable variation in the rates of infant mortality in England.

THE EPIDEMIC OF YELLOW FEVER.

THE confusion and misery caused by this epidemic are so great that it is impossible to obtain any trustworthy particulars as to the chief characteristics of the malady on this occasion. All efforts are now directed to the dispersion of the people, so as to free as quickly as possible the worst centres of infection from human beings before they are attacked. High land, temporary means of accommodation (such as tents or huts), with a fair supply of food and water, are just now the practical desiderata, as much pains as is possible under the circumstances being taken to destroy all infected bedding and clothing. It is well known that in the case of yellow fever fomites are a specially active agent in the dissemination of the disease, so that, as we indicated last week, it is particularly desirable that no clothing or bedding should be landed at home ports if the individuals to whom they belonged have been the victims of the epidemic or have recently recovered from the disease.

By latest accounts 15 deaths occurred on the 2nd inst. at Vicksburg, and *The Times* reports that 1700 cases have already occurred in that city. On the same day there were 53 deaths at Memphis, and 10 fresh cases had occurred at Louisville. But these fragmentary statistics give no idea of the distress caused by this fearful outbreak.

To complicate matters still further, it appears that the negroes have been obstructive, to the extent of endeavouring to prevent the pitching of tents in a salubrious locality near their own special quarter. About 1000 tents arrived at Memphis from Washington and Philadelphia some days ago, and by this time are probably all utilised. It is worthy of note that nearly all the places attacked at present are situated between 30° and 36° N. lat.

We are glad to refer our readers to some useful notes on the contagiousness of this disease in another column by Dr. Andrew Dunlop, of Jersey, who was for some time in charge of a telegraph ship stationed at the West Indies.

According to *The Times* and other daily journals the epidemic is increasing in Memphis, and so many places on the river are now quarantined that most of the steamers have been laid up. Medical aid is very greatly required, for the disease seems to have attacked an unusually large proportion of the surgeons sent to give assistance. More than 400 new cases were reported at Vicksburg on the 24th ult., twenty deaths having occurred in thirty hours. Several curious instances illustrative of the infective nature of the malady are given in the daily journal.

THE PATHOLOGY OF VACCINIA.

THE pathology of the process of vaccinal injection has been lately studied experimentally by M. Maurice Raynaud, who has arrived at some interesting conclusions, which he communicated to the Académie de Médecine at one of its recent meetings. He found that the development of the vaccine vesicle is not essential to the production of immunity, since it was equally obtained when, after subepidermic inoculation, the development of the vesicle was artificial prevented. The peripheral nervous system takes, as might be expected, no part in the production of the phenomena of vaccinia, for they occurred in a typical manner when the nerves going to the part were divided previous to inoculation. The course of the pustule was quite unaffected. The subepidermic inoculation of blood in vaccinia is without effect. Even the transfusion of a considerable quantity of blood produces no appreciable result, and subsequent inoculation still, as a rule, causes vaccinia. It seems probable, however, that, under some circumstances, transfusion of vaccinal blood will prevent subsequent inoculation from taking effect, even though no other effect is produced. But the immunity thus obtained is not transmissible by a second transfusion of blood to another animal. It is thus improbable that the blood is the vehicle by which the vaccinia is generalised in the economy. The subepidermic inoculation of vaccine lymph, taken from the lymphatic vessels nearest to the vaccine vesicle, gave the same negative results as the subepidermic inoculation of the blood. But, on the other hand, by injecting some grammes of this lymph into the blood of a horse, an attack of "horse-pox" was produced. It would seem, therefore, that this lymph is active, provided it is employed in a sufficiently large dose. After normal vaccination, the swelling of the nearest lymphatic gland invariably occurs; nevertheless, the juice of this gland is never, at any period, capable of producing vaccinia by its inoculation. Traces of virulence may be found in the lymphatic system between the vesicle and the gland, but beyond the gland, none. This circumstance seems to indicate that the glands possess an office of modifying the products of the vaccine process, characterised by the loss of virulence, but this property cannot be positively assigned to the glands until it is proved that they are essential for the effect—a proof difficult to give, especially since the direct injection of vaccine lymph into the blood will cause vaccinia. This relation of the vaccine poison to the glands establishes, however, an important difference between it and the malignant pustule, which it is important to note in relation to the general theory of the action of these poisons.

THE ANALYSIS OF MILK.

M. A. ADAM has sent to the Académie des Sciences a note on the new process for the analysis of milk, which gives rapidly the amount of butter, of lactose, and of casein in a uniform scale. The apparatus employed for the analysis consists essentially of a glass tube, holding forty centimetres, having a stopper above and a glass tube and stopcock below. Into this is introduced, first, ten cubic centimetres of alcohol at 75° C., containing $\frac{1}{100}$ of its volume of caustic soda; secondly, ten cubic centimetres of neutral milk; and, thirdly, twelve cubic centimetres of pure ether. The tube is closed, well shaken, and allowed to rest for ten minutes. Almost instantly two layers are formed, sharply separated—an upper, limpid layer, containing all the butter; secondly, a lower opalescent layer, containing all the lactose and all the casein. The lower layer is then drawn out, with the exception of about one centimetre. That which remains is then shaken up with the upper layer. This buttery solution is allowed to run out into a porcelain capsule, and is washed with ether to collect the fat evaporated, and weighed. The difference gives the weight of the butter increased by one centigramme in consequence of adherent lacto-caseous matter. If the ether is then evaporated in another capsule, the direct weight of the butter is ascertained. In order to separate and estimate the lactose and casein, the liquid first drawn off is diluted with distilled water to 100 cubic centimetres, and ten drops of acetic acid are added. The casein then separates in a flocculent precipitate, like that of nitrate of silver. After allowing it to stand for five minutes, it is poured upon a dry filter, which is kept covered to prevent evaporation. Thus 94 to 96 per

cent. is collected of a liquid which contains only the salts of the milk, acetate of soda formed during the process, and lactose. The latter is then estimated by means of Fehling's solution. If a known volume is then evaporated to dryness, the amount of lactose can also be distinguished by two weighings, one before, the other after, incineration, deducting from the weight thus obtained that of the acetic acid combined with the soda. This casein is washed two or three times with distilled water, and the filtering paper containing it is strongly pressed between two layers of paper to flatten it as much as possible, and it can then be dried in a few minutes. The weight of the filter before and after the operation gives that of the casein. Or the casein may be detached from the filter, dried, and weighed. These operations are easily executed in an hour and a half, and if at the beginning an additional ten cubic centimetres of milk is placed to evaporate with two drops of acetic acid, the amount of dry residue of water and of ashes may also be ascertained. Five cubic centimetres of milk will suffice for the analysis, and the apparatus is very portable.

SANITARY SCIENCE AFLOAT.

WHETHER the reports that have reached us as to the rise and progress of cholera on the northern shores of Africa be exaggerated or not, they have at once, as our readers will readily observe, raised all the old and objectionable features of the quarantine system as practised by several nations that environ the coasts of the tideless sea. As, however, our possessions in that sea or its borders continue to increase, so should our opportunities for practically demonstrating the folly and cruelty of the regulations still enforced by the Spanish, Portuguese, and Ottoman Governments. If, as may be fairly anticipated, increasing difficulties exist in carrying out the still somewhat stringent regulations in connexion with the administration of the Suez Canal, the Khedive will probably, in his sanitary as well as financial straits, come to England for aid. Inasmuch, then, as the Canal is now the highway from East to West, along which all goods, cholera included, are transported, with Cyprus as a sort of house of call, an unexampled opportunity will occur for the organisation and adoption of a system of sanitary surveillance that shall exclude the endemic diseases of the East from Western Europe and the United Kingdom, without affording a maximum of obstruction to commerce, plus the perpetration of annoyances, physical and financial, on all persons compelled to travel by sea or land between England, Southern Europe, Asia, and Northern Africa.

THE OLDEST MAN IN THE WORLD.

THE stories of men whose age is considerably over a hundred generally come from districts in which verification is impossible. Never, perhaps, even from such districts, has a candidate for the age of one hundred and eighty years been presented, but one is offered for our credence in the person of a citizen of Bogota, in San Salvador. We are told that he only confesses to this age; but his neighbours, who must be better able to judge, affirm that he is considerably older than he says. He is a half-bred, named Michael Solis, and his existence is testified to by Dr. Hernandez, who was assured that when one of the "oldest inhabitants" was a child this man was recognised as a centenarian. His signature, in 1712, is said to have been discovered among those of persons who assisted in the construction of a certain convent. Dr. Hernandez found this wonderful individual working in his garden. His skin was like parchment, his hair as white as snow and covering his head like a turban. He attributed his long life to his careful habits; eating only once a day, for half an hour, because he believed that more food than could be eaten in half an hour could not be digested in twenty-four hours. He had been accustomed to fast on the first and fifteenth of every month, drinking, on those days, as much water as possible. He chose the most nourishing foods, and took all things cold.

A WHOLESOME LESSON TO GUARDIANS.

THE *Mid-Surrey Gazette* comments with justice on the lesson taught the Wandsworth Board of Guardians lately. The Board, which has not been very happy in its dealings with the profession, wanted an assistant medical officer, and advertised for one at a salary of £120, as the *Gazette* says, two pounds ten shillings a week, "nearly half as much as a third-rate comic singer would expect at the Battersea Music Hall." There was only one candidate. This gentleman very properly wished his duties defined. The infirmary medical officer, explained that the duties would be to dispense medicine in the dispensary, to keep the dispensary books and the infirmary books, to assist the medical officer in operations, and to act for him in his absence. This seemed such a medley of dispensing, book-keeping, and healing, to be done for £120 a year, that the candidate gracefully retired. The guardians discovered that highly-educated medical men are not quite so plentiful as clerks, and agreed to seek permission of the Local Government Board to increase the salary to £150.

THE INDIAN CIVIL SERVICE.

WE have received from a correspondent some additional information respecting this service, from which it appears that there are a very large number of civil appointments held by army medical officers, some of them in the British and others in the Indian service. Thus, in the North-west Provinces there are three first-class civil surgeoncies, and twenty-four of the second-class, three of which are held by men in the British medical service. Our correspondent, in fact, endeavours to show that there is no sure road to obtain a civil appointment. It is, we believe, acknowledged that the anomalies are in many instances very conspicuous, and certain radical changes in the department are contemplated.

SWIMMING.

THE awful catastrophe on the river on Tuesday night, by which, in a few minutes, 500 or 600 persons were drowned within sight of all the appliances by which life is usually saved, impresses us more than ever with the importance of introducing swimming into the ordinary education of children of both sexes. The growing love of excursions and adventures by land and sea—in themselves so healthy and commendable—suggests the wisdom of this course. We have but to visit some of the coast towns or seaports where bathing and swimming are cultivated almost as fine arts—conspicuously, perhaps, South Shields, at the mouth of the Tyne—to see how, in such accidents as those of Tuesday, persons might be made comparatively independent of all extraneous aid, and accomplish their own deliverance.

THE ASSIMILATION OF QUININE.

THE relation of the amount of quinine eliminated by the urine to that taken by the mouth has been studied by M. Personne, with the object of determining what proportion is destroyed in the economy. He concludes that about one-half of that taken in is destroyed. He found that all the quinine which is eliminated by the urine and soluble in acids can be transformed into neutral sulphate of quinine without appreciable residue; also that a resinous material is obtained, insoluble in acids and similar to that which is obtained during the extraction of the alkaloids of chinchona. Hence it is inferred that the quinine which is eliminated by the urine has not undergone any appreciable

alteration or isomeric modification. These substances represent nearly one-half of the quinine which is taken in, and hence at least one-half must be destroyed in the economy.

HOSPITAL SUNDAY AT PORTSMOUTH.

WE gather from our contemporary, the *Hampshire Post*, that the success of the Hospital Sunday Fund this year is endangered by the dissatisfaction of a section of the community with the theological views of the chaplain of the hospital at Portsmouth. We hold that a chaplain who obtrudes questionable religious dogmas in a hospital, is, *ipso facto*, unfit for his post. A hospital is not a place, and sickness is not an occasion, for sectarian influence or teaching. But let us implore the dissatisfied to take other means of settling their differences with the obnoxious clergyman than by imperilling the success of the Hospital Sunday Fund. This fund is for the *sick*. Let it be affluent and generous. And in order to this let all controversy be carried on separately.

SANITATION AT WARRINGTON.

THE foundation of a new hospital for the reception of cases of infectious disease was laid on the 29th ult. at Warrington. This town seems to be somewhat in the van as to sanitary matters, for the building just commenced is intended to supplement the accommodation already in existence for cases of this kind, and will house twenty-four additional patients. The cubic space allowed to each bed is 2280 feet, and the rooms are fitted with the so-called Manchester grates, by which, if they work properly, a good supply of heated air is sent to all parts of the room. There is also a very complete disinfecting apparatus in connexion with the hospital, but which is also generally available for the townspeople.

IT appears from the *Army and Navy Gazette* that the Cape Yeomanry is to consist of 3000 men, divided into three regiments. The surgeoncies to these corps will be in the gift of His Excellency the Governor of the Colony. One drill or muster on one day is required in each month, and a muster once a year for seven consecutive days. Surgeons must supply themselves with horses and equipment, to defray the cost of which they will receive £25 each the first year, and for each of the succeeding years the sum of £15. During the yearly training the daily pay of surgeons will be a guinea and a half, with rations and forage for horses. We are thus explicit because we have been lately deluged with all sorts of questions as to Cape appointments, their value, &c.

THE order of the Mejidié of the fourth class has been conferred on Dr. Fetherstonhaugh and Mr. John Neylan, in recognition of their laborious and useful work in the medical relief of the sick and wounded during the late sanguinary struggle in the East. Dr. Fetherstonhaugh (many of whose interesting letters from the seat of war will be found in the first volume of THE LANCET for the current year) had already received, from the Turkish Government, a medal for his services. Mr. Neylan served at "Ecole Civile" Hospital at Stamboul; subsequently as head of Section at Philippopolis until invalided. He is now serving at Baron Mundy's model Barrack Hospital "Ecole Militaire, Stamboul."

THE *Asmodeo* (a Sicilian journal) of August 27th records that in Savoca a fossil bird of gigantic size has recently been discovered. It existed in the diluvial period and was coetaneous with man. The characters of the beak indicate that it belonged to the Rapaces. The fragments have been forwarded to, and are now being examined by, Dr. Gemellaro of Palermo. The same journal states that a second volume of Dr. Michelotti's work, entitled La Clinica Messinese, has been published, containing:—1. A new method of abstracting blood from the forehead in hysterical attacks. 2. Remarks on the condition of the tongue in herpes.

FROM recent advices it appears that the borough of Chesterfield is now quite free from fever. Several of the schools at Dronfield are closed, but none at Claycross, although Dr. Mackintosh, the medical officer of health, has strongly advised that procedure, and has also repeatedly drawn the attention of the local authority to the importance of providing hospitals and a mortuary. During the past three months about fifty deaths have occurred from scarlet fever in the neighbourhood of Chesterfield, exclusive of the borough.

DR. WOLLASTON, of Chard, has lost his life from a carriage accident. The bolt of one of the shafts came out, causing the horse to start, and the doctor jumped out; but in doing so struck his head against a wall, and was killed; his wife kept her seat and was uninjured.

The Lancet Analytical Commission.

REPORT
ON THE
FOOD PRODUCTS
EXHIBITED IN THE
FRENCH AND ENGLISH DEPARTMENTS
OF THE
UNIVERSAL EXHIBITION OF PARIS.

No. II.

WE have now to notice some products exhibited and manufactured by "La Société des Potages Economiques," the "French soups," prepared in accordance with the method patented by Dr. Gannal, and under his personal superintendence. The soups consist of a "bouillon" so concentrated that when combined with certain vegetable and farinaceous substances, and the whole mixture properly dried, it assumes a solid form. Reduced to the density of 1·230, the bouillon is solid when cold, and liquid when hot; mixed then with vegetables, or other alimentary substances, it forms a kind of pasty mass, which is soft and easily compressed into tablets. These become solid when cold, and can then be completely dried on the stove without alteration of form. The tablets after their complete desiccation are coated with the same bouillon, which, when dried, aids in their preservation, and adds to their good quality. The number of combinations which may be made with the concentrated beef bouillon and other alimentary substances is very great, but the following are some of the principal: with rice purée, with rice and mixed vegetables, with rice and haricot beans (Prince Condé's favourite dish), with mixed vegetables (Julienne), with semoline, with Italian paste, with Brazilian tapioca, with pearl tapioca, with wheat flour—forming an article specially prepared for invalids, and called "fromentine." We have carefully examined the whole of the above varieties of soups, and found the quality of all excellent, and their state of preservation perfect. A further recommendation of these soups is their cheapness. This is not the first occasion on which we have expressed a favourable opinion of these preparations, and we are glad to find that that opinion has been fully sustained by the manner in which they are appreciated by the public. These soups are prepared with so much taste and delicacy that they would prove accept-

able even to the most fastidious invalid. In Paris they may be obtained of Mons. A. Chapu, and in London from his consignees, Messrs. W. Barker and Son, Bishopsgate-street Without.

Mons. E. Masson, Paris, exhibits, amongst other things, a "Potage Universel" in tablets. We regret that we have not had the opportunity of examining these, and so cannot express any opinion as to their merits.

This will now be the most fitting place to notice the dried vegetables of the firm of Messrs. Prevet et Cie., late Chollet et Cie., since these are also prepared under the patent of Dr. Gannal, who has justly earned a high reputation by the ability and ingenuity he has displayed in devising methods for the preservation of animal and vegetable substances. The vegetables, and even fruits, to be preserved are dried in such a manner as to allow of their recovering, when immersed in water, their former size, consistence, taste, and colour. In this state, when properly packed, and not exposed to damp, they will keep for a very long time; and when it is remembered that most vegetables and fruits contain from 80 to 90 per cent. of water, nearly all of which is removed in the process of drying, it will be obvious that the advantages of the process as regards weight and transportation must be very great. This method of preservation has now been tested for some years, and with very satisfactory results, and these dried vegetables are very largely consumed in the French army, navy, and merchant service, as well as in very many private establishments. They are often cut into thin slices, different kinds being mixed together, and this mixture is much used for making Julienne soup, which may thus be prepared at all seasons of the year. We are surprised that more use is not made in this country of these vegetables, especially in the preparation of soups in winter, when fresh vegetables are dear and comparatively scarce.

Having thus described the soups and vegetables prepared under the patents of Dr. Gannal, we will in the next place make a remark or two on some "Boules de Légumes" or balls intended for soup, fabricated by Mons. F. D. Wasilewski, of Bourbon. These boules consist of the usual vegetables and substances employed in the making of soups, sweetened with a little sugar and containing a small quantity of brown colouring matter, the whole being moulded into little balls of the size of ordinary forcemeat-balls. When immersed in the soup and slowly boiled in it for some time, the balls fall to pieces and disclose to view the vegetables, in a fragmentary state, of which they are so largely composed. These boules retain, of course, the flavour of the vegetables from which they are prepared, and, being well dried, will keep for a considerable time. Their use is specially recommended amongst troops and on board ship, where, in many cases, it is not possible to obtain fresh vegetables. Used under such circumstances, they are, of course, antiscorbutic.

The next article we will notice is an "Extrait de Légumes," prepared by Madame Laurencel, of Montrouge, near Paris, for the colouration of soups, sauces, and ragouts. The extract, called "Dulcicolore," is put up in small masses like beans, each bean wrapped in tinfoil, and one of which is sufficient to colour a large quantity of soup. The preparation is carefully made, and cooks no doubt will find it very useful.

A very considerable industry of France consists in preserving different kinds of fruit by a sugar process, in which the sugar is made to crystallise on the surface of the fruits, giving them a very pleasing and brilliant appearance. Those who judge of this process by the few boxes of crystallised greengages occasionally seen in shop windows in London, would form a very imperfect idea of the extent and character of this method of preservation. It is in the south of France that it is carried out to the greatest extent and brought to so much perfection, for it is there that the rarest kinds of fruits are to be most abundantly obtained. Among the kinds thus crystallised are unripe oranges and lemons, pine-apples, figs, green almonds, apricots, cherries, chesnuts, and many other descriptions of fruit. These are beautifully arranged in very handsome boxes, which form objects of great attraction in shop windows, and are largely purchased as presents for friends both at home and abroad.

One of the best-known preservers of crystallised fruits is Mons. Nègre, whose factory we visited two years since at Grasse, near Cannes. He is also one of the principal exhibitors in the Exhibition of fruits thus preserved.

Another industry, still more considerable, is that arising out of the preservation of certain kinds of fruits by the simple process of desiccation. It is by it that the well-known French prunes or plums, which grow chiefly in the Lot-et-Garonne, are preserved, as well as the Normandy pippins. Mons. Gérard St. Blancat, at Le Bouscat, near Bordeaux, has a large manufactory for the preparation of fruits by this method, and he is one of the chief exhibitors in this class, especially of samples of prunes. Another exhibitor of dried prunes is Mons. A. Crespy, of Agen, which is in the midst of the plum district.

Mons. Blareau, of Awargnies le Petit, exhibits a somewhat singular preparation of a dark, reddish-brown colour, in flat sheets or cakes, resembling somewhat chocolate, called "Pâté de Pommes." These cakes consist of cooked and dried apples, prepared, according to the inventor, in the following manner. The apples are cooked in their own juice by steam, passed through a sieve, dried, and cut into sheets, or small pieces ready for use. In this state it is said that the pâtés will keep ten years, and they are specially recommended for use in the navy. They may be eaten dry, or when diluted with water and boiled, as a compôt, which replaces very satisfactorily the fresh apples, and is of course available at all times of the year.

Mons. Léon Defer, of Paris, exhibits an article which consists of the dried albumen or white of egg in the shape of a coarse powder. The albumen is dried at such a low temperature that when cold water is added to it, gradually heating the mixture at the same time, it readily dissolves, the albumen reacquiring its original properties, and the solution when thus treated becoming frothy and viscid. One kilogramme of the powder is said to contain the whites of three hundred eggs, and it forms a convenient and very suitable material for clarifying soups, coffee, and many other articles of the *cuisine*. Mons. Defer is represented in London by Mr. James Harvey, 16, Railway-approach, London-bridge.

Among the exhibitors of Gelatine are Mons. Foullon, of Nanterre, and Mons. Perreau, of Paris. The latter manufactures the article in several forms. One of these is in thin, almost colourless sheets, intended for the preparation of jellies and blanc-mange. Another, also in sheets, is of a beautiful rose-red colour, designed for the colouring of jellies and confiture de Groseille. Other sheets exhibited are for the stiffening of lace, tulle, &c., and straw hats. Some, again, are of a beautiful violet colour, and these are intended for ornamental purposes. Lastly, very thin, smooth sheets are specially prepared for covering, protecting, and glazing cartes de visite and engravings.

Now the manufacturer of gelatine, as the result of his processes, and with a view to utilise all the material upon which he operates, necessarily becomes the maker of a variety of other articles. Thus the feet of oxen contain not only gelatine, but also a great quantity of oil; hence he prepares from them a "Huile de Pieds de Bœufs," while the bones of the feet yield phosphate of lime. Then from the refuse he is necessitated to prepare an inferior gelatine called "Gelatine Colle" or glue, what still remains being ultimately employed as manure. So that operations of considerable importance have to be carried on in a gelatine manufactory concurrently with the preparation of gelatine.

The French have long been noted for the excellence and delicacy of their manufacture of sugar confectionery, and this reputation is well sustained by the exhibitors. Amongst those firms who exhibit in this department are Mons. Colin, of Nancy, a maker of very beautiful dragées; Messrs. E. Gentils, Vincent, et Cie., Paris; Mons. Michel Legros, Limoges; Mons. Raingo, Paris; Mons. Seugnot, Paris; Mons. J. Sigaut, of Gentilly; Mons. J. Tavernier, Paris; Mons. A. Tremblay, Paris, whose specialty is the manufacture of pâtés de gommes; and Messrs. Jacquin et Fils, Paris, whose dragées were most beautifully and delicately made and coloured. In France, a stringent law has long been in operation against the use of metallic and other in-

jurious colouring matters. From the examination of the above bonbons and those of other manufacturers, it would appear that this law is rigidly observed and enforced. Mons. Legros manufactures barley-sugar and marshmallow lozenges, this latter description of lozenge being much used in France. He prepares these, according to the old formula of his predecessors in the business, with pure cane sugar, and not with glucose, which impairs their flavour as well as their keeping properties. Mons. Seugnot states that he is the first who has distilled the extract of fruits for the manufacture of the bonbons made by him. Mons. Signat exhibits a sweetmeat little known in this country—viz., "Nougat." Of this we examined two varieties, one "Nougat fin," and another "Nougat aux pistaches à la vanille." The flavour of both was exceedingly nice, and the latter even delicious. The distinguishing character of nougat is that it is made with a fine smooth paste composed of sugar and pounded almonds, interspersed with larger pieces of sweet almonds and pistachio nuts, with often a flavouring of vanilla, the whole being dried and pressed into cakes of various sizes. Altogether nougat is one of the very nicest and most delicate sweetmeats with which we are acquainted. Messrs. Raingo et Cie. prepare honey lozenges, Venetian barley-sugar, English bonbons, and nougat of Tunis.

Monsieur Noël Delon, fibricant of Nimes (Gard), exhibits the wood or root of liquorice, and samples of the inspissated juice. He claims for the juice that it is absolutely pure and free from all adulteration—a very great recommendation, for there are few articles known to us more liable to contamination and sophistication than liquorice. The samples of Mons. Delon's manufacture, which we have examined, fully support the statement of the maker as to their purity.

Other makers of liquorice are Messrs. Carénou and Tur. These gentlemen have two manufactories, the one in Saragossa in Spain, the other at Monusac in France, where they claim that their predecessor established the first manufactory in France for this branch of industry. They state, in a communication with which they have favoured us, that at their works in Spain they employ 2000 people, and that the value of the produce of their two manufactories amounted in the year 1877 to more than a million and a half of francs.

France is a great chicory-consuming, and, by consequence, a great chicory-growing, country. There are several exhibitors of this root in all forms and conditions. There is no doubt that the real reason of the general use of this vegetable is based upon the saving of coffee effected by it. It is certainly no proper substitute for coffee, since it does not possess the peculiar and valuable properties of that berry, although it is so often made to take its place. It does not even, in our judgment, improve the flavour of coffee when added to it, while it certainly diminishes its aroma and dietetic properties just in proportion to its admixture. One or two of the manufacturers of chicory likewise exhibit a coffee substitute made from acorns—"Glands doux." In appearance this article resembles coffee, but, of course, it possesses neither the essential oil nor the active principle, caffeine. The beverage prepared from it, when mixed with sugar and milk, may be, to some extent, palatable, and, from the tannin contained in it, may exert a tonic effect. Acorn coffee was formerly much made in Germany, and even given to children. Under the microscope the powder of the roasted acorn presents several structural peculiarities whereby, as was pointed out many years since by Dr. Hassall, it may be readily discriminated. Even in England the use of acorn coffee was not unknown. After all, it may be said that there is nothing really injurious in this so-called coffee substitute, or in many other torrefied substances which have been recommended and employed from time to time instead of coffee. The points to be remembered are, that they possess none of the properties of coffee, and that they ought not to be mixed with the coffee without the knowledge of the consumer, or sold at anything like the price of coffee.

Mons. Curel, of Paris, exhibits substitutes of coffee, of which we have heard before, prepared from figs, and which he denominates "Figuine Curel," and "Essence de Figuine." The prospectus concerning the former is headed "Trésor des ménages! Santé! Force!" and it goes on to state that the figuine, of which the name alone explains the origin, is the product of many varieties of choice figs from Provence, Asia, Egypt, Spain, Naples, &c. Figuine, no doubt, imparts to the beverage made with it colour, a certain bitterness, with sweetness, and thus furnishes a beverage which some may like; and which, when mixed with coffee, doubtless renders the latter less heating and exciting, and, consequently, better adapted for children and some invalids than coffee alone.

Contrary to what might be anticipated, there are comparatively few exhibitors of coffee; amongst them are the following:—Mons. Barlérin, of Tarare (Rhone); Mons. Cahan, Pharmacien, Paris; Mons. E. Choveaux, Paris; Mons. Coudure, Bordeaux; Messrs. F. B. Fraschina et Cie., Marseilles; M. Jallageas, Angoulême; M. Savigny, Chartres; and M. Trébucien, Fils, Paris.

Possibly the reason why there are not more exhibitors under this head is to be found in the fact that almost every householder daily roasts and grinds his own coffee, a circumstance which fully explains the excellence and superiority of French coffee.

Mons. Barlérin exhibits a preparation which he calls "Café Barlérin." This is evidently a compound of which coffee forms one only of the constituents. According to the inventor, it will cure most of the diseases to which flesh is heir.

Mons. Cahan exhibits an essence of "Café de Trablit." It possesses very markedly the odour of coffee, and is so strong an extract that two teaspoonfuls are sufficient to make a large breakfast cup of coffee. Prepared in the manner directed it furnishes a really excellent beverage, and the preparation will be found a very useful one in cases where the saving of time and trouble is an object.

Mons. Savigny exhibits a coffee which bears his own name, and is called "Café Savigny de Chartres." It is described as a combination of the best coffees, torrefied with 10 per cent. of sugar. We have examined this coffee microscopically, and find that it consists entirely of coffee, with the above-named addition of sugar. The sugar attracts moisture, and so causes the powder to become clogged or caked, and thus may contribute to the preservation of the aroma of the coffee. The torrefied sugar, being exceedingly soluble, quickly imparts to the infusion made with the Café Savigny a rich brown colour, and gives it at once the appearance of strength.

Mons. Choveaux exhibits an article which he styles "Café par Excellence." This we have had no opportunity of examining, and can therefore express no opinion as to its merits.

Mons. Coudure prepares an essence of coffee; this also we have not examined.

Messrs. Fraschina manufacture and sell a "Café économique," which they call "L'Abyssinien." This, from the statement accompanying it, is evidently a compound article. Messrs. Fraschina state of this preparation, "Our principal object has been to replace to a certain extent the natural coffee, which costs a very high price." "In a word, the Abyssinien defies all comparison for health and cheapness."

M. Jallageas, junr., exhibits a "Café du Filtre Mystérieux," whatever that may signify, and which the maker guarantees as free from all mixture, but adds, "ready to drink, all sweetened," which means, we suppose, that it contains a proportion of torrefied sugar.

Chocolate is consumed in France to a much greater extent than in England. It consists, in nearly all cases, of cocoa and sugar pressed into the form of cakes; while the article which we principally use in this country, and which we call cocoa, is almost unknown in France. Chocolate is in England looked upon with some misgiving and even disfavour, and yet we believe it is a much purer and better article than many of our cocoas, although it must be acknowledged it gives more trouble in the preparation. The aromatic principles of the cocoa are better preserved and longer retained in the form of cake, which, moreover, does not admit of adulteration to the same extent as cocoa in a state of powder.

There are many well-known exhibitors of chocolate in various forms, the following being some of the principal:—Messrs. Caron (late Alglave), Paris; Mons. Choquart; the Chocolat des Colonies Françaises, Paris; Mons. Derossy, Paris; Mons. N. Drillon, Paris; Mons. Guillon (Chocolat de la Compagnie Parisienne); Mons. Ibled, Paris; Messrs. Louit Freres, Bordeaux; Mons. Masson, Paris; Mons. Menier, Noisiel-sur-Marne; and Mons. Trébucien, Paris.

We shall notice the products of but few of the above-mentioned manufacturers, these being in many cases so well known. Mons. Caron exhibits a "Chocolat à l'Extrait de Viande de Liebig" in cakes and pastilles. This chocolate is very nicely and delicately prepared, and the smell and taste of the extract are so completely masked by the chocolate that

the preparation may be recommended to the most delicate palate. Messrs. Louit Frères exhibit different qualities and kinds of chocolate under the name of "Chocolat Louit." One of these, of very fine quality, is called "Chocolat des Dames." The system pursued by this house in printing the price of each tablet on the outside of the wrapper is a very excellent one, and affords much protection to the public. Messrs. Louit warrant their chocolates to consist simply of a mixture of cocoa and sugar, the relative qualities of these varying according to the price. In their prospectus they remark that "the price indicated upon each tablet refers to the quality of the chocolate, and the purchaser is requested to observe that the label with the price be intact, this precaution being the more necessary as, with or without intention, one quality might be substituted for another." Mons. Menier, having also a manufactory in England, is an exhibitor in both the French and English sections of the Exhibition; we will reserve our remarks on the chocolates of this well-known firm until we come to treat of the English exhibits.

Mons. Trébucien exhibits a "Chocolat des Gourmets" and a "Café des Gourmets," neither of which have we examined, but they are much advertised in Paris.

Correspondence.

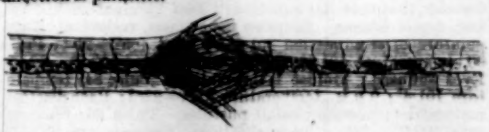
"Audi alteram partem."

PIEDRA.

To the Editor of THE LANCET.

SIR,—Under the above name several of your correspondents have described a form of complaint with which I have long been familiar. I have observed it only in the whiskers, in which a number of white specks are seen, and feeling like knots when the finger is passed over them. In the first edition of my Lectures on Pathological Anatomy, delivered in 1857, will be found the following:—"There is another affection of the hair, which I do not think is described in books, but about which you will sometimes be consulted, and that is a *breaking of the hair*. Owing to the fracture a white spot is produced, and if a number of these are present—as, for example, in the whisker—they have been mistaken for the ova of pediculi, and alarmed the patient. If you examine one of these hairs you may find it broken in one or two places, and thus presenting a nodulated appearance; if then examined by the microscope the fibrous structure of the hair will be found to be broken up into a brush. I have seen interspersed a few dark granules, but I never could make out distinctly any sporules of fungi. You see examples of what I mean in these drawings."

The earliest of these drawings was made in 1852, and shows a hair taken from the beard of a young man, whose attention was attracted by the number of white specks in it. At that time the parasitic origin of many skin diseases was still under discussion, and therefore I by no means hold to the opinion expressed in the quotation. I now believe that the affection is parasitic.



I enclose the earliest drawing I have by me, which, although only a rough sketch, shows that the affection had long been known to myself, and therefore in all probability to many others. It is labelled "broken hair from whisker, causing appearance of a white knot."

Your obedient servant,

Grosvenor-street, Sept. 3rd. SAMUEL WILKS.

To the Editor of THE LANCET.

SIR,—If the writers of the three letters on the above subject, which have appeared in your impressions of the 24th and 31st August, will turn to page 459 of Dr. Tilbury Fox's work on skin diseases, they will find not only a description but also a drawing (fig. 80) of a hair affected by the disease they seem to consider a new one. Although both drawing and description are incomplete, they are correct as far as they go; and indeed the terms used by Mr. Morris to describe his specimens are in many cases identical with those used by Dr. Fox.

About six months ago a much respected official at one of our medical corporations sent me, through my colleague, Mr. Milton, some peculiar hairs from his beard and moustache for microscopical examination, and I had no difficulty in demonstrating that their peculiar appearance was due to large masses of minute spores within them. While the great mass of the hair forming the beard and moustache was almost white, the diseased hairs were brown in colour, causing slight disfigurement; and upon a small percentage of these brown hairs a number of nodes could easily be seen with the naked eye, in the position and having the appearance already described in the other letters.

As Dr. Cheadle is not yet prepared to bring his views before the profession, perhaps I may be permitted to give the result of my observations as to the cause of the nodes in question. In my opinion, the spores of the fungus enter the tube of the hair, in the first instance, at its free end; but they may penetrate under the epidermis by the same channel, and thus get into the roots of other hairs, as stated by Dr. Fox. At all events, the special seat and growth of the fungus is in the tube or cavity of the hair, and it specially attacks the loose cells of the pith, upon which it seems to live and to fill up the interstices between them with masses of minute spores, vastly more minute than those of tinea tonsurans, for which it ought never to be mistaken, either as regards size, seat, or arrangement.

But the point of special interest is the following:—Just as large fungi have been seen, by the force of their growth, to raise up heavy rocks from their bed, so do these minute fungi exert an exploding force from within upon the shaft or barrel of the hair within which they are developing. Many of your readers may have seen a gun-barrel burst on one side near the breech, and noticed how the soft iron had first bulged out before it finally burst. This is exactly what takes place when, by the plugging up of the hair-tube, and an increased growth of the fungus at certain spots, it is forced to make room for itself, first by bulging out, and then bursting, the barrel of the hair.

The effect of the latter process is first to cause a longitudinal breach, from which the masses of fish-roe-like fungi protrude; but the fibre-like cells of the shaft, thus rudely torn asunder, become entirely disorganised by the growth of the spores amongst them, so that the hair gradually breaks up all round, as shown in Dr. Fox's drawing, and finally breaks across, showing the brush-like ends already alluded to by others.

If, moreover, we cut the hair through the centre of one of the unexploded nodosities, evidence of the constant bursting tension is given by the oozing out of the roe-like mass at either extremity; and not only can we trace the course of the spores along the hair-tube under the microscope, but we can see where their increased growth is about to burst the tube, even before any bulging out is perceptible. As the disease appears to be somewhat rare, it is my intention to place several specimens beneath microscopes in the secretary's room of St. John's Hospital for Diseases of the Skin, Leicester-square, where they will remain during the next week, so that anyone desirous of examining the fungus will be made very welcome to do so at his own convenience.

I am, Sir, your obedient servant,

Trevor-terrace, Rutland-gate, S.W., September 2nd, 1878. GEORGE HOGGAN.

CARBOLIC ACID IN SMALL-POX.

To the Editor of THE LANCET.

SIR,—My reason for bringing this subject under discussion was not merely to call attention to a means of preventing disfigurement, as might be inferred perhaps from some of the letters which have appeared in your columns. I was fully aware of all the ectrotic plans of treatment which had been proposed with this view, such as ointments, colloids, dilute carbolic acid, &c., all of which seem to have succeeded more or less in preventing pustulation, but have nevertheless not been generally adopted. When I first used the strong acid for this purpose, it was with the intention of

dealing with the entire eruption, and thus preventing the fetor and loathsome state produced by suppuration of the vesicles and the resulting secondary fever. Want of opportunity prevented my carrying out the idea, and at that time possibly the very dark colour presented by the urine gave the impression of its being unsafe to apply the acid over a very large surface. I do not now know of any observation tending to show how far this may be done with impunity; but I think that the strong acid once applied, and the surplus immediately removed, would give a more limited absorption than the constant application of a diluted solution.

To deal with the entire surface of the body is the point of most practical importance, and one well worthy of the attention of those who have large opportunities for investigation. A better field for a little of my friend Dr. Richardson's "positivism in medicine" could not well be found, nor one more calculated to yield important results. The ointment of Dr. Thorburn Paterson may possibly be found to fulfil the object in view, but I must confess that I should prefer, for an application which is to cover the entire body, something not in itself poisonous, and the momentary application of nitric acid seems to be devoid of risk, and would probably act equally well in aborting the vesicles. If it is possible to prevent pustulation at one point, it should be possible, as it is certainly desirable, to prevent it generally.

Dr. Bakewell's interesting observations on small-pox show that the blood becomes entirely freed from variolous corpuscles on the fourth day. He says: "The blood is, in my opinion, only freed from the variolous poison (i. e., corpuscle) when the pock has come out. From that time we have no longer to deal with small-pox poison *in* the blood, but with, as it were, a parasitic disease outside the blood, and outside the true skin" (*Medical Times and Gazette*, 1872, vol. ix., p. 252).

Orth (Diagnosis in Pathological Anatomy, p. 16) makes the further important statement that "not only the contents of the vesicles in variola, especially before they have begun to be converted into pustules, but the underlying skin as well, are remarkable for the presence of micrococci, which are easily demonstrated in fresh sections." Whether the micrococci are derived from the blood, or whether they obtain access from the sweat-glands around which the first changes begin, according to Rindfleisch (Pathological Anatomy, vol. i., p. 303), is uncertain, but to them is evidently due the subsequent pustulation and production of septic poison, the absorption of which gives rise to the secondary fever. This result may, I think, be entirely prevented by ectrotic treatment generally applied.

From a consideration of this treatment in small-pox, one is naturally led to the subject of the vaccine vesicle. If Dr. Bakewell's observations are correct, it would appear that the definite action of the virus is concluded with the formation of the vesicle, and if so, can any good result ensue from its pustulation? The cicatrix, to which so much importance is attached, is an evidence of pustulation, and as this is the usual sequent of vesication, it is, so far, an evidence of the completion of vaccination; but is it necessary? Small-pox without pitting is possible, but the disease has none the less existed. So, it would seem, might the pustule be dispensed with in vaccination, and many inconveniences and not a few risks obviated.

I remain, Sir, yours, &c.,

Lynn, August 26th, 1878. JOHN LOWE, M.D.

P.S.—I am sorry that I had forgotten Dr. Kellett's letter (THE LANCET, Aug. 3rd, 1872), which well illustrates the value of carbolic acid in small-pox. Though the results he obtained are by no means perfect, they are excellent, and go far to prove that much more may be accomplished by a complete abortion of the vesicles. To effect this, treatment should be begun the moment the vesicles are distinct, but not earlier. Dr. Kellett uses a solution of one part of carbolic acid to eight of water. The result is scarcely ectrotic, as I gather from his letter. I feel sure that much more may be done by using the stronger acid. The smarting produced is readily allayed by the application of water.

To the Editor of THE LANCET.

SIR,—During the last three or four weeks, various letters on the above subject have appeared in your pages, and more is claimed for the treatment than it really deserves. Throughout the epidemic of 1871–72, carbolic acid was used most extensively in the form of carbolised oil, not in one or two cases, but in hundreds, I may almost say thousands of cases. While house-physician in the Hampstead Small-pox Hospital, I saw considerably over a thousand cases of small-pox in every stage, and of every degree of severity, and while I admit that no outward application tends more to soothe the patient, to allay the heat and itching in small-pox, and in younger patients to keep them clear of pediculi, still I cannot claim for it that it either prevents pitting or induces abortion of the rash. In a paper which I published in your journal early in 1872, I made a statement to the effect that small-pox, and small-pox *after vaccination*, were two entirely different complaints as a rule, and I would seek to endorse that statement now. Small-pox is one disease; small-pox in a vaccinated person another. Take the latter class of cases, and you will find that in over 50 per cent. of them the rash aborts, whether you treat it or let it alone, and in few of these aborting cases is there any pitting. These cases occurring in private practice, and a certain line of treatment being pursued, the natural inference is that it is a case of cause and effect. But it does not follow that *post hoc, ergo propter hoc*. In a case recorded in last Saturday's LANCET by Dr. R. Lockhart Lawson, he ordered a carbolic lotion, which was applied to the face; and further on he says, "although the pustules had not become confluent they undoubtedly would have been in a few days had the lotion not been applied." The writer, it will be noticed, omits to mention whether he was dealing with a vaccinated or unvaccinated person.

I have the notes of over 500 consecutive cases which occurred in the wards under my charge at Hampstead, and if I am not trespassing too much on your space I will give you a case or two.

CASE 266 (in my note-book). — Caleb M——, aged thirty-two, draper, admitted Dec. 24th, 1871. One vaccination mark; sixth day of illness. Very copious rash all over him; vesicular, becoming pustular, with inflamed, reddened areolæ. Face very much swollen; tongue brown and dry; eyes much swollen, but no subconjunctival ecchymosis; profuse lachrymation. Pulse 108; temperature 101°; respiration natural. 9 P.M.: Temperature 103·4°. Ordered half an ounce of compound iron mixture every three hours.—26th: Doing well; rash maturating; face and head not so much swollen; tongue dry; takes food well. Pulse 108; temperature 101°; respiration natural. — 27th: Rash aborting; doing very well. Pulse 108; temperature 100°.—28th: Rash almost gone. Pulse 84; temperature 99·4°. — 29th: Rash quite aborted. Pulse 84; temperature 99·4°. — 30th: Improving. Pulse 72; temperature 99°. — 31st: Pulse 84; temperature 99°. — Jan. 7th, 1872: Removed to the convalescent wards.—Feb. 15th: Discharged well.

In this case there was every indication of a severe confluent or semi-confluent attack, but, without any other treatment than an iron and strychnia mixture, the rash aborted and the patient recovered perfectly.

In the following case there was absolutely no treatment.

CASE 280.—Ambrose N——, aged twenty-nine, polisher, admitted Jan. 20th, 1872. When admitted he was very feverish, but that has subsided. Two vaccination marks; fifth day of illness. Eruption not copious, vesicular. Temperature after admission 101·6°; 9 P.M., 103°.—21st: Pulse 90, temperature 101·8°; 9 P.M., temperature 103·8°.—22nd: Eyes suffused; profuse lachrymation. Pulse 84, temperature 101·4°; 9 P.M., temperature 102°.—23rd: Rash discreet, maturating; pustular, small pustules. Pulse 96; temperature 100·2°.—24th: Rash aborting. Temperature 99·6°.—25th: Doing well.—30th: Convalescent.—Feb. 23rd: Discharged well.

I could cite many other instances, scores of them, to show that under *any* line of treatment, or under no treatment, the great majority of vaccinated cases end in the rash aborting, however severe, or however copious it may appear at the outset. Consequently, those who have only seen an odd case now and again, and who naturally look for a serious confluent or semi-confluent case, are agreeably astonished to find things so much better than they dared hope for that they naturally attribute it to the treatment. Perhaps Dr. Thorburn Paterson would favour us with an account of how many *unvaccinated* cases he has tried the treatment on, with details and results; and if he has succeeded in preventing pitting in these cases by carbolic acid, it is more than we can

say of the treatment in Hampstead, where it was tried on an extensive scale; not only it, but almost every other treatment, reasonable or unreasonable, which anyone could suggest, with the same results—viz., unvaccinated cases little or no impression. Vaccinated cases, which I hold are not true small-pox, end principally in aborting rash, treat them or not treat them.

Yours, &c.,
M. H. TAYLOR, M.B.

Johnstone, N.B., Aug. 28th, 1878.

THE RHEUMATIC ORIGIN OF CHOREA.

To the Editor of THE LANCET.

SIR,—I venture to ask Dr. Sturges to add to the value of his paper in your last week's issue by filling up what seems to be an important omission—viz., some notice of the family history of his choreic cases; because, judging only from my own experience, if I had to decide whether chorea was rheumatic in origin or not, by the previous or subsequent occurrence of rheumatic fever in choreic individuals, I should certainly arrive at the same conclusion as does Dr. Sturges. But when we go back to the family history the case is far otherwise. I can only refer at the moment to thirty-two cases of chorea in children which have come under my own care, and of these *nineteen* have a rheumatic, and two a gouty family history; though only one of the patients had previously suffered from rheumatic fever. The history of rheumatism is not always so definite, nor the members of the family attacked so close relatives to the choreic, as could perhaps be wished; but a sufficiently strong body of evidence is thus afforded in favour of rheumatic chorea, compared with which the history of rheumatism in the choreic themselves is as nothing. So strong, indeed, does it seem to me to be that it has reconverted me to the opinions of the previous observers which Dr. Sturges tries to combat, and leads me to consider the rheumatic diathesis one of the most frequent, persistent, and multiform with which we have to deal in childhood. This, however, is only an opinion. Dr. Sturges will, I am sure, forgive me for asking a little more of his valuable experience upon a question which is certainly both interesting and important.

I am, Sir, your obedient servant,

Sept. 3rd, 1878. JAMES F. GOODHART.

THE VIOLET POWDER POISONING CASE.

To the Editor of THE LANCET.

SIR,—There is a letter in the last issue of THE LANCET on this subject, signed "H. M. G.," who evidently forgets that when I handed the body over to Professor Tidy, for analysis, it had been dead nearly three weeks, and, as I stated at the trial, was far too much decomposed for Dr. Tidy to form any idea of the sloughs on the body or the thickness of the skin.

To my mind there is no doubt but that the whole of the arsenic found its way into the body by absorption; which I consider proved by the fact that the greatest quantity was found in the liver.

As regards the suggestion that some of the arsenic from the skin might have got mixed up with the viscera during the post-mortem examination (which, by the way, was not suggested by Professor Tidy, but by Mr. Wells, the solicitor for the defence), I can clearly prove this was not the case, as also the idea of "H. M. G." that the arsenic might have been derived from the surface of the body when boiled in the acidulated water in Dr. Tidy's analysis. When my attention was called to the redness of the skin on the child, which was on the third day after birth, on close examination I found it to be most intense in the creases of the body, where the powder could be seen, which caused me directly to suspect it; I at once ordered the child a warm bath, and the use of the powder to be discontinued, taking some of it home to analyse, which I found to contain a large percentage of arsenic. The next morning I told the mother the result of my examination of the powder, and impressed upon her the necessity of bathing the the child well, which was done daily. On the fourth day the sores had assumed a considerable size, and discharged a greenish-yellow matter, when I had bread poultices applied; this treatment was continued until its death, on the tenth day. Although arsenic is sparingly soluble in water, it seems impossible for any to remain on the body after being immersed at least six times in warm water, and the creases where the sores were continually poulticed. As to the powder being inhaled during the application of it to the body, I am inclined to think that a very small quantity found its way into the system by this means. In the first place the nurse would inhale by far the larger quantity, from the position of her face whilst applying it to the child, when we should have expected symptoms of arsenical poisoning in her; and again in this case there was an entire absence of any symptom of arsenical poisoning by the mouth, neither diarrhœa nor sickness, nor could I detect at the post-mortem examination any signs in the throat of arsenical poisoning. Taking into consideration the delicate structure of the infant skin, that at each powdering ten or fifteen grains of arsenic would be distributed over the body each time, and that it had five or six dressings with the powder, it is not at all surprising that Professor Tidy obtained such a large quantity of arsenic in his analysis.

I remain, Sir, yours truly,
HENRY BROWNE, L.R.C.P.E., L.S.A.

Lynton House, Albion-road, Stoke Newington,
September 2nd, 1878.

ARMY MEDICAL DEPARTMENT.

To the Editor of THE LANCET.

SIR,—It would simplify matters greatly if some one would inform us what stamp of man is most suited to become a military medical officer, and also what sort of a career he should lead in the service. Next, we would require to find what advantages the State should offer with success to induce such men to enter the army, and then the proper position in which to place them in order that they might practise their profession with advantage to all parties.

Now, I would like to see military surgeons, well-read, sound professional men, taking pride in their profession, and being additionally proud in serving Her Majesty in an honourable position. Smartness being the attribute of the soldier, our surgeons must not be exceptions. Let them be of the social stamp, preferring to mess with their brother officers to a chop in lodgings. If they are able to take an oar in a regimental boat, and find enjoyment in the ball-room, all the better. A man of the above stamp will prefer living in barracks; he will remain a bachelor for years; he will be always about when wanted. He will hear of Private S. "gone sick this morning," because the sergeant-major pulled him up for so-and-so. Private S. will therefore receive a more thorough examination as to his illness, &c. Our surgeon will take a pride in his regiment; will weed out the sickly; and, in his rambles through the barracks, he will sometimes find a man looking pale and thin. On questioning him he will be told of a bad cough, little sleep, &c., "but I did not like to report sick, sir." Then, by a little good advice, telling the man to come and see him without his name being on the sick report &c., the service will probably be saved a soldier of the good old sort. Women and children will report themselves sick sooner than they would to a stranger.

Now, Sir, if this is a good type of a military surgeon, does the State hold out sufficient inducements to bring him into the service, and also give him the opportunity of following the course pointed out? I think not. At present the medical officer, though of the above type, lives out of barracks if possible; he dines sometimes at the mess, sometimes at the club; he cannot ask his friends to mess, being only an honorary member. He cultivates the society of civilians more than that of military men. He has no attractions in barracks when his professional work is over. He cares little for the corps whose health he looks after. He loses the advantages derived from that bond of union—the basis of so many of the good social qualities observable in the British officer—namely, the mess.

The above conclusions are come to by one who has been in a good regiment, and was sorry to see the Warrant of '73; but who subsequently studied and advocated the "unification scheme" for over twelve months, and who now admits

its failure, due to the following causes:—1st. The money-saving policy of the Government, by which a reduction of over two hundred medical officers was made; hence stoppage of leave, sudden moves, strange surgeons treating patients on different days. 2nd. A complete want of a social system. Then principal medical officers not carrying out the instructions laid down for economising the time of the junior officers, bathing and other parades being still attended by them, though contrary to regulations. I have no hesitation in saying that Sir W. Muir's "unification" never got a fair trial, nor is he likely to be assisted by medical officers so long as he gives the best of the bargain to the State and so much discomfort (from reduced numbers) to the Army Medical Department.

Therefore appoint a certain number of men to regiments (one to each) for five years, on completion of which they will return to the staff, and await their turn for another regiment. The staff, if sufficiently large, will furnish men for "Bearer companies." In war time, all medical officers to be at the complete disposal of the principal medical officer for any duties he may think fit. In time of peace, regimental appointments will suit some men, the staff others; and only one man being taken for each regiment, the staff will be sufficiently numerous to prevent frequent changes of stations.

I remain, Sir, your obedient servant,

19th August, 1878. SURGEON.

HYOSCYAMINE IN INSANITY.

To the Editor of THE LANCET.

SIR,—Practical observations on the use of this drug in the various forms of insanity are of great interest to the specialist, but they likewise appear well suited to clear up the obscure question of dose in general therapeutics. Your correspondent, Dr. Charles Wm. Chubb, describes the effects of a dose of hyoscyamine, in which the prominent symptoms were "delirium for many hours, with illusions of the sense of sight, both as to size and colour." On the other hand, Dr. R. Lawson finds hyoscyamine act curatively in pure mania, "with long-continued and destructive excitement." Dr. R. Lawson likewise found that in such cases he had to diminish the dose to obtain beneficial results. The principle of the dose question, then, would seem to be,—Let the dose be large when the drug is given on the principle of contraries, as in giving bromide of potassium in epilepsy; and, let the dose be small relatively when the drug is administered upon the principle of similars, as in the case of hyoscyamine in mania. I think it may with truth be said that many useful additions to the Materia Medica have fallen into disrepute from overlooking the principle upon which the drug is applicable, and, consequently, either doing harm by giving too much, or failing to do anything by giving too little.

I am, Sir, yours faithfully,

Bedford, August 31st, 1878. WM. SIMPSON CRAIG, M.D.

"CONTAGIOUS PNEUMONIA."

To the Editor of THE LANCET.

SIR,—In a paragraph headed "Contagious Pneumonia" in THE LANCET of the 24th inst., you refer to a description by Dr. Kühn of outbreaks of pneumonia, "having almost an epidemic form," which occurred at Moringen in Hanover.

In noticing Dr. Kühn's remarks, you write: "He urges that this form of pneumonia must be distinguished from the genuine croupous pneumonia." This observation might, altogether unintentionally on your part, lead some of your readers to think that Dr. Kühn was original and singular in this opinion. On the contrary, in a paper communicated by us to the Medical Society of the King and Queen's College of Physicians on April 14th, 1875, and published in the *Dublin Journal of Medical Science* (vol. lix., page 399, May 1875), we pointed out that Laennec had observed this variety of pneumonia in 1814. He called it "Epidemic Pneumonia" (*De l'Auscultation Méd.* Cf., also "Laennec on the Chest," translated by Forbes, 1827, p. 220.) The affection was also described by Dr. Octavius Sturges in St. George's Hospital Reports, 1870. It was more recently mentioned by Sir William Jenner as likely to occur in a school at East Sheen, Mortlake, in consequence of the improper ventilation of a sewer in the vicinity of the school. It has been referred to by several other writers, and is especially spoken of by Dr. Sturges in his valuable work on Pneumonia.

We have ventured to call the disease "Pythogenic Pneumonia," a term which has been adopted by most writers on the subject since the publication of our paper above referred to. In that paper we distinctly point to its origin as being similar to that of enteric fever. We thus completely agree with your remark, in relation to Dr. Kühn's view, that "it may be due to the same poison as typhoid."

We believe there can be no doubt as to the existence of a *pythogenic pneumonia*, which arises epidemically, and is possibly, or, as we think, probably, infective. Its resemblance to the contagious pleuro-pneumonia of cattle is also very remarkable.

We are, Sir, yours very truly,

T. W. GRIMSHAW, M.D.
JOHN WILLIAM MOORE, M.D.

Dublin, August 29th, 1878.

*** The occurrence of epidemics of pneumonia is, as our correspondents point out, an established fact, and is sufficiently well-known. But Dr. Kühn's observations are of especial value as demonstrating that this pneumonia is contagious from individual to individual. The outbreak at East Sheen was mentioned by Sir William Jenner, not as "likely to occur," but as having occurred.—ED. L.

Obituary.

THOMAS BOYMAN KNIGHT, L.R.C.S. & P.ED.

BY the sudden death of Mr. Thomas Boyman Knight, a gloom has been cast over the small town and district of Haslingden, Lancashire, and the profession have to mourn the loss of one who, had he been spared, gave promise of being an able practitioner. Mr. Knight was a native of Lincolnshire, and had studied at Glasgow. During intervals, while a student, he had acted as assistant to Mr. Stott of Haslingden, for a period, in all, of over two years, and was universally respected and beloved by all who knew him, or had come under his care. So lately as the 6th of August last, Mr. Knight took the double qualification of Edinburgh, and had only returned to Haslingden a fortnight, when he took scarlet fever, an epidemic of which, of a virulent type, is prevalent in the district. The disease took a remarkably satisfactory course until Sunday the 25th, when head symptoms set in, after which he was never conscious, and died on Monday the 26th, at the early age of 28 years. He was interred at Minsbury on Wednesday. The respect in which in which he was held may be inferred from the fact, that almost all the shops in Haslingden, Flaxmors, and Helmshore, were shut, and the blinds in private houses were drawn down.

Medical News.

APOTHECARIES' HALL.—The following gentlemen passed their examination in the Science and Practice of Medicine, and received certificates to practise, on Aug. 29th:—

Baber, Henry Aitkens, Pinhoe, near Exeter.
Dixon, William Edward, Compton-road, Canonbury.
James, James Thomas, Llwynjack, Llandovery.
Womersley, Joshua King, Grove House, Norwich.

The following gentlemen on the same day passed the Primary Professional Examination:—

Charles William Beresford, James Scott Tew, and Charles Wood, University College; Robt. Thompson Farrer, Leeds School of Medicine; Harold E. B. Flanagan and Hugh P. Rawland, Guy's Hospital; Ernest C. Lunn, St. Thomas's Hospital; Ernest O. Wight, St. Mary's Hospital; Albert Wheeler, Middlesex Hospital.

At the recent examination for the prizes in Materia Medica and Pharmaceutical Chemistry annually given by the Society the successful candidates were:—

1st.—Thos. R. F. Emerson, St. Mary's Hospital.
2nd.—John Shaw, St. Thomas's Hospital.

JOHN LEADER, M.D., has been appointed to the Commission of the Peace for the County Cork.

THE will of Dr. Thomas Clifford Davies, of Plinolas, Lancashire, has been proved under £25,000.

SILVESTER EASTES, M.R.C.S. Eng., has been presented with a handsome timepiece by the Court "Pride of the Cliff," No. 1732, of the Ancient Order of Foresters, Folkestone, on his resigning as medical officer.

AT the Kent and Canterbury Hospital a large chimney was struck by lightning in the storm on the 29th ult., and fell through the roof into the library, doing considerable damage. The *débris* knocked down a passing pedestrian, who was picked up insensible.

THE deaths registered in London last week amounted to 1365—representing a mortality-rate of 19·9 per 1000. Of this number 6 were due to small-pox, 7 to measles, 29 to scarlet fever, 12 to diphtheria, 56 to whooping-cough, 23 to different forms of fever, and 148 to diarrhœa. Fifty-nine deaths were attributed to violence in some form.

Medical Appointments.

ANNINSON, B., M.D.Castab., M.R.C.S.E., has been reappointed Medical Officer of Health for the Cambridge Urban Sanitary District, at £250 for one year.

BATTLE, W. H., M.R.C.S., L.S.A., has been appointed House-Physician to St. Thomas's Hospital.

BRIGGS, R. M., M.R.C.S.E., L.S.A.L., has been appointed a Medical Officer to the South Birmingham Provident Dispensary.

CASTLE, H., M.R.C.S., L.S.A., has been appointed Assistant House-Surgeon to St. Thomas's Hospital.

CLAY, G. L., M.R.C.S.E., L.S.A.L., has been appointed a Medical Officer to the South Birmingham Provident Dispensary.

CLIBBORN, W., M.B.Dub., L.R.C.S.I., has been appointed a Medical Officer to the South Birmingham Provident Dispensary.

CLOWES, J. S., M.R.C.S.E., L.S.A.L., has been appointed Surgeon and Agent for the Coast-guard Stations at Palling, Happisburgh, Bacton, and Mundesley, Norfolk, vice Bond, deceased.

CRAMPTON, J. S., L.R.C.P.Ed., L.R.C.S.Ed., has been appointed Assistant Medical Officer to the Newcastle-upon-Tyne Lunatic Asylum, vice Brown, resigned.

EDGELOW, S. H., M.R.C.S.E., has been appointed Assistant House-Surgeon to the Kent and Canterbury Hospital and Dispensary, vice Cubb, resigned.

FARNCOMBE, R., M.R.C.S.E., L.S.A.L., has been appointed a Medical Officer to the South Birmingham Provident Dispensary.

GILL, J. B., M.D.St. And., M.R.C.P.Ed., has been appointed Medical Officer to Court "Pride of the Cliff," No. 1732, of the Ancient Order of Foresters, Folkestone, vice Eastes, resigned.

GIMLETTE, G. H. D., M.R.C.S., L.S.A., has been appointed House-Physician to St. Thomas's Hospital.

GOYDER, C. M., has been appointed Junior House-Surgeon to the Newcastle-upon-Tyne Infirmary, vice Dixon, promoted to Senior.

GROOMBY, W. W., M.R.C.S., L.S.A., has been appointed Assistant House-Physician to St. Thomas's Hospital.

HASLAM, W. F., M.R.C.S., L.S.A., has been appointed House-Surgeon to St. Thomas's Hospital.

LITTLE, D., M.D.Ed., L.R.C.S.Ed. & L.M., has been appointed Ophthalmic Surgeon to the Manchester Royal Infirmary and Dispensary, vice Windsor, resigned.

LLOYD, J., M.B.Lond., M.R.C.S.E., L.S.A.L., has been appointed a Medical Officer to the South Birmingham Provident Dispensary.

LOGIE, J. S. S., M.D.Ed., L.R.C.S.Ed., has been appointed a Certifying Factory Surgeon for Kirkwall, vice Stewart.

LYLE, T., M.D.Aberd., L.R.C.P.L., has been appointed a Physician to the Exeter Dispensary.

MARSHALL, H. F., M.B.Lond., M.R.C.S.E., L.S.A.L., has been appointed a Medical Officer to the South Birmingham Provident Dispensary.

MARSH, F., M.R.C.S.E., L.S.A.L., has been appointed House-Surgeon and Secretary to the Staffordshire General Infirmary, vice Abbott, resigned.

MONRO, W., M.D. St. And., L.R.C.S.Ed. & L.M., has been appointed a Medical Officer to the Arbroath Infirmary and Dispensary, vice Dewar, resigned.

PAIRMAN, R., M.D., C.M.Ed., has been appointed Medical Officer for the No. 4 District of the Parish of St. Pancras, at £110 per annum, vice Mitchell, resigned.

PUGHE, R. N., M.B.Lond., F.R.C.S.E., has been appointed Honorary Assistant Medical Officer to the Infirmary for Children, Liverpool, vice Ashby, resigned.

RAVENHILL, T. H., M.R.C.S.E., L.S.A.L., has been appointed a Medical Officer to the South Birmingham Provident Dispensary.

ROBINS, B. S., M.R.C.S.E., L.S.A.L., has been appointed a Medical Officer to the South Birmingham Provident Dispensary.

SHAW, E. S., M.R.C.S.E., L.S.A.L., has been appointed a Medical Officer to the "Good Samaritan" Lodge of Odd Fellows, Louth, vice Best, resigned.

SIKBOLD, L., F.C.S., has been appointed Public Analyst for the County of Westmoreland, at 21s. per analysis for the first twenty-five, and 10s. 6d. per analysis beyond.

SMITH, H. U., M.B.Lond., M.R.C.S., has been appointed House-Surgeon to St. Thomas's Hospital.

SMITH, R., L.S.A.L., has been appointed a Medical Officer to the South Birmingham Provident Dispensary.

TAKAKI, K., L.R.C.P., M.R.C.S., has been appointed Senior Assistant House-Physician to St. Thomas's Hospital.

TAPLIN, J. F., M.D., C.M. Glas., has been appointed a Medical Officer to the South Birmingham Provident Dispensary.

TATE, F. S., M.R.C.S.E., L.S.A.L., has been appointed a Medical Officer to the "Good Samaritan" Lodge of Odd Fellows, Louth, vice Best, resigned.

THOMPSON, W. G. W., M.D.Glas., L.R.C.P.Ed., L.R.C.S.Ed., L.S.A.L., has been appointed Assistant Medical Officer to the St. Leonard, Shoreditch, Workhouse Infirmary, Hoxton-street, vice Davies, appointed Medical Officer for the Hoxton New Town District.

THORNE, G. L., M.D.Aberd., M.R.C.S.E., L.S.A.L., has been appointed Medical Officer of Health for the Swanage Urban Sanitary District, Dorsetshire, at £21 for one year, vice Delamotte, resigned.

TYRRELL, W., L.R.C.P., M.R.C.S., has been appointed Resident Accoucheur to St. Thomas's Hospital.

UNDERHILL, F. W., M.R.C.S.E., L.S.A.L., has been appointed a Medical Officer to the South Birmingham Provident Dispensary.

WARD, J., M.R.C.S.E., L.S.A.L., has been appointed a Medical Officer to the South Birmingham Provident Dispensary.

Births, Marriages, and Deaths.

BIRTHS.

BOWEN.—On the 21st ult., at Wrentham, Suffolk, the wife of Edward Bowen, L.R.C.P.Ed., of a daughter.

GANGE.—On the 29th ult., at Faversham, the wife of Fredk. A. Gange, M.D., of a son.

GROSVENOR.—On the 24th ult., at Ladbroke-grove, the wife of Geo. Fox Grosvenor, M.D., of a daughter.

HOLLIS.—On the 30th ult., at Brighton, the wife of William A. Hollis, M.D., of a son.

LYTH.—On the 27th ult., at Rotherham, the wife of John B. Lyth, L.R.C.P.Ed., of a son.

MACARTNEY.—On the 31st ult., at Warwick-terrace, Chorlton-on-Medlock, the wife of T. Lamont Macartney, L.R.C.P.Ed., L.R.C.S. & L.M.Ed., of a daughter.

PARROTT.—On the 25th ult., at Hayes, Middlesex, the wife of Edward J. Parrott, M.R.C.S.E., of a daughter.

MARRIAGES.

HOPE—MONGER.—At the Wesleyan Chapel, York, West Australia, James W. Hope, L.R.C.P.Ed. &c., Colonial Medical Service, to Helena Aurora, eldest daughter of John Henry Monger, Esq., J.P., Faversham House, York.

PHILLIPS—SWAINE.—On the 28th ult., at St. Mary's, Prittlewell, Edw. England Phillips, L.R.C.P.Ed., to Emily Mary, daughter of the late G. W. Swaine, Esq.

WRIGHT—REDDIE.—On the 27th ult., at the Free Church Manse, Juniper-green, Edinburgh, J. Henderson Wright, M.B., C.M., to Nellie Alice Charlotte Hamilton, daughter of the late Robert M. Reddie, Esq.

DEATHS.

BLOMFIELD.—On the 30th ult., at Verulam-buildings, Gray's-inn, Andrew Muskett Blomfield, M.R.C.S.E., Surgeon-Major in the Bombay Army, aged 47.

DAVIES.—On the 28th ult., at Reynoldston, Glamorganshire, Daniel Davies, Surgeon, in practice before Aug. 1st, 1815, aged 83.

DAY.—On the 24th ult., at Little Meolse, Cheshire, Henry Day, M.R.C.S.E., aged 53.

JONES.—On the 2nd inst., at Brackley, Northamptonshire, Richard Jones, F.R.C.S.E., aged 77.

MUNRO.—On the 27th ult., at Holgate Villa, near York, Dr. Alexander Munro, aged 68.

PITMAN.—On the 28th ult., at Frankfort House, Upper Holloway, Frederick Enkel, infant son of the late Dr. Pitman, of Acacia House, Highgate-hill.

ROBERTSON.—On the 25th ult., at Cambray Villa, Cheltenham, Lennox Robertson, M.R.C.P.Ed., aged 41.

ROSE.—On the 27th ult., at Ealing, Joseph Francklin Rose, M.R.C.S.E., aged 72.

SHARP.—On the 28th ult., at Kensington-park-gardens, Henry Lockyer Sharp, F.R.C.S.E., aged 81.

VISE.—On the 30th ult., at Spalding, Wm. Foster Vise, M.R.C.S.E., aged 35.

WOLLASTON.—On the 1st inst., at his residence, Lyme Regis, Dorset, from accident while driving, Richard Gulston Wollaston, M.R.C.S., L.S.A., L.R.C.P.Ed., aged 64.

[N.B.—*A fee of 5s. is charged for the insertion of Notices of Births, Marriages and Deaths.*]

BOOKS ETC. RECEIVED.

Dr. E. Leyden: Ueber die Entwickelung des medicinischen Studien.
Dr. Auzias-Turenne: La Syphilisation.
Prof. Errico de Renzi: Semeiotica Fisica. Part I.
Holmes's Botanical Note-book.
Dr. Thomas Dwight: The Identification of the Human Skeleton.
Leisure Hour.
Sunday at Home.
Good Words.
Sunday Magazine.
Pastile Papers. Vol. II.
Franz von Löher and Mrs. A. B. Joyner: Cyprus, Historical and Descriptive.
Dr. J. Schneer: Alassio and its Climate.
Dr. G. C. Wittstein: The Organic Constituents of Plants and Vegetable Substances, and their Chemical Analysis.
R. J. Godlee: An Atlas of Human Anatomy. Part VI.

Notes, Short Comments, and Answers to Correspondents.

THE STUDENTS' NUMBER OF THE LANCET will be published on Saturday next, Sept. 14th. Those gentlemen holding official situations connected with Medical Institutions in the United Kingdom, who have not yet forwarded the necessary information to our Office for publication in that Number, are earnestly requested to send it *without the delay of a single post*.

GASTRO-HYSTEROTOMY.

DR. R. P. HARRIS, of Philadelphia, has, we learn from the *American Journal of Medical Sciences*, lately published an interesting *résumé* of the operation of gastro-hysterotomy in the United States, the result of eight years of labour. It is pointed out by Dr. Harris that one of the greatest difficulties the surgeon has to contend with has been the exhausted state of the patient at the time of operation, the labour having frequently continued for two days before relief was afforded. Of 72 cases occurring in America, but 17 were operated on within the first twenty-four hours; of these, 70 per cent. of the mothers and 80 per cent. of the children were saved. There are given in all 80 cases, with the recovery of 42 women and the loss of 38. Uterine sutures were used in 12 cases, with 5 recoveries. Silver wire is considered to be very superior to the catgut suture. In one case, in which death took place thirty hours after the insertion of three silver wire sutures in the uterus, it was found at the autopsy that the uterine wound was entirely healed. Several cases on record were saved by reopening the abdominal wound above the pubes, and clearing out accumulated secretions. The *general* result of the American cases is estimated as a saving of 50 per cent. of women, while in the timely operations the saving is reckoned to be from 70 to 75 per cent. of both women and children.

W. H. K.—The Under-Secretary of State for Home Affairs probably.

THE POROPLASTIC SPINAL JACKET.

To the Editor of THE LANCET.

SIR,—The letter of Dr. Jas. Hutchison, published in your issue of this day may lead to misunderstanding as to the method of applying the poroplastic jacket. Permit me therefore to call attention to the following points.

The jacket is made in the shape of the body, and moulded according to the necessities of the case by the manufacturer, so that the surgeon is saved the troublesome process of cutting out the splint &c., as described by Dr. Hutchison, and has only to soften and mould the jacket to his patient to obtain an accurately fitting appliance. By this means great economy of time is gained; in hospital practice eight or ten patients can easily be "jacketed" in an hour; whilst if the splint had first to be cut out by the surgeon, half an hour at least would be required for each patient.

Finally, allow me to disclaim having any influence over the adoption of the term "poroplastic felt," the material having been so named by the inventor, Mr. Cocking. I am responsible only for using it as a spinal jacket, and, for this purpose, assisting to bring it under the notice of the profession. It is very satisfactory to me to find my opinion of the superiority of felt over plaster-of-Paris confirmed by so good an authority as Dr. Hutchison.

Yours obediently,
Grosvenor-street, August 31st, 1878. FRED. R. FISHER.

Mr. W. A. Frost.—We are not acquainted with the address of the gentleman referred to, who has not favoured us with a communication on the subject other than that mentioned by our correspondent.

Climate.—Surrey, as Weybridge, Walton, Dorking, Boxhill; Sussex and parts of North Devon, as Linton, Ilfracombe, and Westward Ho.

"GELSEMINUM" v. "GELSEMIUM."

To the Editor of THE LANCET.

SIR,—In your correspondence column of last week's LANCET I observed a letter from Dr. Gage Parsons, in which, believing himself to have fallen into an error in respect of gelseminum sempervirens, he re-writes its title as it now appears in the U.S. Pharmacopœia (gelsemium), as I am informed.

Now, Dr. Sidney Ringer and others use the term gelseminum, and I believe rightly, the U.S. Pharmacopœia to the contrary notwithstanding; and in support of my belief I would refer your readers, who take an interest in botanical nomenclature, to a "Manual of Botany for North America, containing generic and specific descriptions of the indigenous plants and common cultivated exotics growing north of the Gulf of Mexico," by Professor Amos Eaton, the fifth edition of whose work, dated 1829, at the present moment lies before me, in which it appears as "gelseminum sempervirens"; so that, at any rate if age in respect of priority of description, and a comprehensive, well-written work for the time have anything to do with the matter, to say nothing of the professor's position as a teacher in Troy, its place in nomenclature will still be held by gelsem*inum versus* gelsem*ium*.

I am, Sir, your obedient servant,
SAML. SMITH,
Bristol, Sept. 2nd, 1878. Surgeon-Major, 1st Ad. Batt. G.E.V.

HOUSE SANITATION.

THE Commissioners of Pembroke Township, which lies adjacent to Dublin, by the powers delegated to them under the new Public Health (Ireland) Act, have lost no time in putting some of its provisions into force, and have notified that no person, under a penalty of £50, shall build a new house or rebuild an old one without furnishing it with drains properly erected, emptying into the public sewers Proper sanitary accommodation within new houses will also be rigidly enforced, and it would be desirable that the owners of houses already existing which are deficient in these requirements should be compelled to introduce them.

F. R.—THE LANCET of July 13th and August 31st, 1878.

TEMPERATURE OF THE HUMAN BODY IN HOT CLIMATES.

To the Editor of THE LANCET.

SIR,—Dr. Boileau, in his communication to you on the above subject (THE LANCET, August 24th, 1878), seems to think that a statement of mine in your journal of April 13th, 1878, clashes with a subsequent statement of mine in THE LANCET of July 27th, 1878, on the Temperature of the Human Body. If Dr. Boileau will read my letter of April 13th carefully, he will find the following statement:—"I have found the temperature of the human body in health the same in the *tropics* as in temperate regions. All my observations have been made on Europeans with a verified thermometer, the instrument having always been used in the axilla. I have taken numerous observations in Barbadoes, St. Helena, and Brazil, all *tropical* countries, and have made frequent observations on myself and others while at sea in the *tropics*, and I have invariably found the temperature the same as in England—viz., 98·4° F., or a few tenths more or less." It will be observed that the above statements refer wholly to my observations on Europeans in the tropics, and in the tropics only.

In a subsequent letter on the Temperature of the Human Body (THE LANCET, July 27th, 1878), I incidentally remarked that "during my residence in the *sub-tropical* climate of South Africa I have taken some hundreds of temperatures both of Europeans and of natives belonging to different races—Kafirs, Hottentots, Basutos, &c. &c., and I have invariably found that the temperature was about 98·4° F."

I hope that these statements are sufficiently clear to the majority of your readers, as Dr. Boileau evidently confounds my observations on natives in sub-tropical South Africa with those on Europeans in the tropics.

I am, Sir, yours obediently,
August 26th, 1878. J. C. THORNLEY, M.D.

To the Editor of THE LANCET.

SIR,—I was absent from this country when Dr. Boileau's communication appeared in your issue of the 24th of August, otherwise you should have heard from me sooner on the above subject.

I am somewhat surprised to see such an unfounded statement as that made by Dr. Boileau concerning Dr. Thornley's contributions on the same subject. He asserts that Dr. Thornley's letters, one published in April and the other in July in THE LANCET, contain irreconcilable statements. Now, I read both Dr. Thornley's letters at the time of their publication with great interest, and I have read them again to-day, and have utterly failed to find any statement in his July letter irreconcilable with the opinion and statements set forth in his letter of April. Except the reader of Dr. Thornley's letters mistake the temperature of a country for that of a man, I do not see how his letters can be interpreted as conveying two different views. When he wrote his first letter he stated: "As I write I have a much larger array of observations beside me." And he wrote his second letter with increased vigour and positiveness, doubtless called forth by a further consideration of his vast experience as contrasted with that of his opponent. In no other respect do his statements differ in the respective letters.

I have made many observations on the "temperature of the human body," both when at the whale fishing, in South America, at Cape Town, and different places on the Continent and in Egypt, and my experience is that heat or cold influences in no manner whatever the temperature of a healthy person.

I am, Sir, your obedient servant,
JOHN COTTER HENDERSON, M.D., &c.
Blackburn, September 2nd, 1878.

Canada.—Our correspondent cannot be registered in the present state of the law without taking British qualifications, and without English registration he cannot hold the appointments mentioned.

Iethus (sic) does not appear in the Medical Register for the current year. We do not prescribe.

Mr. C. W. Layendecker.—We do not treat with those who use secret remedies.

"COLOURED SILK GLOVES."

To the Editor of THE LANCET.

SIR,—The kind of silk gloves alluded to by your correspondent in the last number of THE LANCET seems to have been a source of intense discomfort to a large number of individuals. In two cases which I have had lately under my care the itching, which was by far the most marked symptom, was intolerable. It disturbed the patients' rest by night, and made them intensely worried throughout the day. In one case, besides the eruption, both hands were hot and slightly swollen. The rash consisted of small pointed, reddened pimples, for the most part scattered, but in some places aggregated together. Belladonna liniment, with nitre and magnesia, relieved the one, but failed to lessen the severity of the other, the itching of which, however, was greatly improved by the continuous application of sulphurous-acid lotion.

With regard to the character of the eruption, it seemed like an ordinary eczema produced from irritation, but modified by the thick epidermic covering of the affected part.

Yours truly,
Finborough-road, S.W., August, 1878. T. F. PEARSE, M.D.

DISCHARGE OF THIRTEEN INCHES OF THE SMALL INTESTINE.

THE *Michigan Medical News* for June last records a curious case which occurred in the practice of Dr. Powers, of Michigan. A boy of fourteen was taken suddenly ill with severe abdominal pains, and soon after commenced to vomit, and had thin evacuations of blood. When seen on the third day, he had high fever, with tympanites. Opiates, aconite, and mercurials were administered, and hot fomentations applied to the abdomen. Relief was obtained, and soon after a full dose of castor oil with fifteen drops of turpentine was given, with the effect of producing a recurrence of the symptoms with increased severity, and vomiting of stercoraceous matter. Opiates were again resorted to, and hot-water enemata used, under which treatment the boy became comfortable, and on the morning of the eleventh day had a free rectal evacuation. Two days afterwards there came away some thirteen inches of the small intestine and a portion of the mesentery. At the date of the communication of the paper, a month later, the patient had nearly recovered his health.

HEMIPLEGIA WITH STARTING OF THE LIMBS.

To the Editor of THE LANCET.

SIR,—A patient of mine, a stout gentleman, aged about fifty, had an attack twelve months ago of apoplexy (sanguineous), resulting in left hemiplegia. He made a fair recovery, and was soon able to use his leg. The use of the arm and hand was, however, a long time coming, and is now very partial, the fingers being flexed into the palm. Three months after the attack he had starting of the limbs of the affected side. Every morning, on awakening about 5.30 A.M., his arm and leg are, as he expresses it, "shot out," and become rigid. The attack is momentary, but often one follows another so rapidly that it seems to him almost constant. Anybody coming into the room or speaking to him will cause one to come on. They generally last till he gets up, when they disappear, and only very occasionally does he have any symptoms of one during the day. I have given him iodide and bromide of potassium, solution of strychnia, and applied the constant current, and the bowels have been kept open, although with great difficulty. He has derived no benefit from the treatment, and gets very despondent concerning his state. If any of your readers could suggest anything likely to do him good, I should be happy to carry out their suggestion. His general health, I may say, is fairly good, so that I have not liked to try either morphia or chloral. I remain, Sir, yours truly,

August, 1878. M.B.

Inquirer.—It rests with the Secretary of State for War; but we believe no candidates will be admitted until after the future conditions of the service have been decided.

Templer.—We know nothing of these establishments. Apply to an experienced surgeon.

CARBOLIC ACID IN MOSQUITO BITES AND WASP STINGS.

To the Editor of THE LANCET.

SIR,—I am able fully to endorse the remarks of a correspondent, in your issue of August 24th, as to the efficacy of carbolic acid in mosquito bites. I found that it also relieved the pain from stings by wasps almost instantaneously, and was led by this fact to try it in scorpion stings, in which I found it very effectual. I used it in both cases in its pure state, applying it with the end of a match to the wound. I believe it acts in such cases as a true specific, by destroying the poison, which is generally admitted, I think, to be formic acid in a concentrated state. Now, the elements of formic acid are in the proportion to form carbonic acid and water, and are very easily converted by oxidation into these compounds. Alum and tartaric acid will also dispel the pain in a few minutes if applied in a concentrated state to the wound.

I had the misfortune to be stung by a scorpion; but having alum at hand, I applied it with immediate relief. I have not used these solutions for mosquito bites; but I should think that they would answer very well, though not as a preventive like carbolic acid.

I am, Sir, yours &c.,

Cosham, August 27th, 1878. W. E. SAUNDERS, A.M.D.

To the Editor of THE LANCET.

SIR,—Last week, a few minutes after perusing a letter in your columns on the use of Carbolic Acid for Mosquito Bites, a patient presented himself, stung on the tongue by a wasp. The tongue was greatly swollen, and seemed likely quite to fill the mouth; in fact, the patient appeared to be in for a severe glossitis. I determined to try the effect of the acid, and gave him a lotion (one drachm to eight ounces), ordering the mouth to be constantly washed out with it, first applying the acid itself to the point stung. In twenty-four hours the inflammation had completely subsided. I make no comment, except that I firmly believe the result to be due to the treatment adopted.

Faithfully yours,

Cobham, August 29th, 1878. WM. J. LAND.

"TREATMENT OF PNEUMONIA."

To the Editor of THE LANCET.

SIR,—My attention has just been drawn to a letter in your issue of August 24th, signed W. Squire, M.D. The writer evidently was labouring under some hallucination. It is, therefore, only with feelings of pity for him that I pen these lines, and subscribe myself,

Yours truly,

Bloomsbury-square, Sept. 2nd, 1878. J. F. STAINES, L.R.C.P.

*** It would have been better if Mr. Staines had to his first letter appended his usual professional signature and address. The mistake would not then have occurred.—ED. L.

RETROFLEXION IN NEW-BORN CHILDREN.

TWO cases of retroflexion in new-born children were some time back recorded by a practitioner in Germany. Both cases presented a thickening of the posterior wall of the uterus.

M.B. Lond.—Consult the Students' Number of THE LANCET for the information desired.

THE MORTALITY OF INFANTS IN ENGLAND.

To the Editor of THE LANCET.

SIR,—I feel indebted for the editorial criticism in THE LANCET of August 24th of my remarks on the untrustworthiness of English registration of early infantile mortality, but must say I retain my opinion expressed in Paris. Listen to M. Bertillon, the master of statistics of Europe: "The error which results from the faulty definition of still-births is much more important in England, where, until this time, families have six weeks for registering their children (France has three days, and in Sweden infants are registered on their birth-day). In England a great number of infants, dying before their inscription, are not registered at all, even as still-births, of which no account is kept in England, and which require no funeral. It even results from this last fact that there is a manifest economy for families to retard the inscription of weakly children, and to make these pass as still-births. Thus a very notable number of deaths escape inscription altogether. The consequence of this subtraction of a great number of infantile deaths is necessarily that the calculation of the mortality of English infants must give a completely factitious and much too low a figure, since a part of those who succumb during the first weeks figure neither among the births nor deaths." (Hygiène du Nouveau-né, 1878, p. 23.)[1]

Your critic erroneously supposes that I wished to make out that French children have less chance of death than English, because I believe in the Malthusian theory of population. This is a mistake. I mentioned in Paris that our British mothers know far better how to nurse and tend babies than their French sisters, and notably the Parisiennes, one-half of whose babies die in the first year of life. In common with every person who studies political economy, I am a Malthusian. That Dr. Farr and so many able medical men are not, I suppose must be simply accounted for by their omission to study Malthus, the Mills, Senior, Ricardo, Garnier, Cairns, Fawcett, &c. It is my critic who dwells among the unscientific in the matter, not myself. In this I am orthodox—i. e., I follow the masters of political economy.

It may interest your readers to know that the members of the Parisian Académie de Médecine are most thorough *practical* advocates of the doctrines of Mr. J. S. Mill, who considered large families as the main cause of poverty, early death, and hard, grinding labour. When in Paris this month I made inquiries respecting the families of the following masters of our art:—Velpeau, Trousseau, Marjolin, Gubler, Bertillon, Perrin, Bergeron, Poggiale, Delpech, Devergie, Pidoux, Bouchardat, Fauvel, Charcot, Lassegue, Broca, Gosselin, Richet, Hérard, Béhier, Nélaton, Trélat (père), Trélat (fils), Millard, Siredey, Rochard, Dumontpallier, Labbé, Lancereaux, Lefort, and a few others. I found that 32 of these famous men had had 63 children, almost exactly two each. In Bordeaux, Dr. Marmisse gave me the statistics of the families of 23 doctors, which amounted to 38 children; and I heard of Laon, a small country town in the north of France, where 6 doctors had had 8 children. The total of this makes 61 French medical men with 109 children, or not two each. Of course, England, with coal, iron, and emigration, can breed faster than other European countries; but I thoroughly admire the parental forethought of these great French masters of medicine and surgery, who justly wish, as far as possible, to see that their children should not be too numerous for their fortune.

I remain, Sir, your obedient servant,

CHARLES R. DRYSDALE, M.D.

Woburn-place, August 30th, 1878.

[1] As if to emphasize my remarks, I see in the morning papers of August 30th how a man, named Mummery, carrying on business at 560, Old Kent-road, as an undertaker, has been found to have the bodies of eight infants in a box of quicklime in a cellar beneath his shop. After that, how can your critic say that no infants are buried without a death certificate? This is only one case of what is going on in all the poor neighbourhoods of London and our large cities. I am convinced that this lowers the registered death-rate of young infants some two or three per cent. Among the richer classes, where all births and deaths *are* registered, we know from Mr. Ansell, of the National Assurance Company, that only some eight per cent. of all children born die in the first year of life. In Liverpool, in poor neighbourhoods, more than thirty-three per cent. die of the effects of bad air or *poverty*, the "positive check" of Malthus. Surely after that we may say, with Mr. J. S. Mill: "Little improvement can be expected in morality until the producing of large families is regarded in the same way as drunkenness or any other physical excess."

*** It is somewhat remarkable that Dr. Drysdale should prefer to accept M. Bertillon's estimate of the value of the English registration system, which from the above quotation, able statistician as he is, he evidently does not fully understand, to that of the Registrar-General and Dr. Farr, who may at least be said to have had better opportunities for judging of the results of civil registration in England. The "faulty definition of still-births," which to a great extent vitiates statistics of infant mortality in France and Belgium, does not affect English registration statistics, as still-births are not registered at all in England. Unless a child has had a separate existence, it is not inscribed in the birth or death register in England. Presuming that the bodies recently found on the premises of an undertaker in the Old Kent-road were those of still-born infants, their non-burial does not affect the question of the trustworthiness of English statistics of infant mortality. Neither do we see how a discussion of the possible effect of a *regulated* birth-rate upon infant mortality will help us to agree with Dr. Drysdale in denouncing the Registrar-General's statistics of infant mortality as untrustworthy.—ED. L.